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A STATEMENT BY THE INTERDEPARTMENTAL COMMITTEE ON PEST CONTROL:

The Interdepartmental Committee on Pest Control composed of representatives of the Departments of Agriculture, Interior, and Defense, and the Federal Security Agency held its regular third quarterly meeting on September 21, 1951 at Washington, D. C. This Committee agreed upon the following release relative to the use of insecticidal vaporizing devices:

"It is the considered opinion of the Interdepartmental Committee on Pest Control that there are at present no data to indicate that the use of thermal generators dispensing only lindane, DDT, or mixtures of the two, for the control of flying insects is unsafe when the following restrictions are enforced:

1. The insecticide shall be released at the rate not to exceed 1 gram per 15,000 cubic feet per 24 hours.

2. Installation shall be made only in commercial or industrial premises, mess halls, and similar locations where human exposure will be on a working day basis—not continuous.

3. The devices should not be used in homes or sleeping quarters.

4. Devices shall be so constructed that output in excess of that recommended is impossible. Fuses to protect against overloading and high temperatures, and a pilot light to indicate whether or not the unit is operating should be 'built-in' features.

5. Units should be mounted above head height and 3 feet or more from the ceiling.

6. Installation shall be such that any material which might condense on nearby equipment, walls, or ceiling cannot be dislodged and fall into or otherwise contaminate food.

Since DDT and lindane are poisons, it is the opinion of the Committee that danger will arise from deliberate or unintentional violation of these basic principles."

H. L. HALLER, CHAIRMAN
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Department of Agriculture
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September 21, 1951

S. W. SIMMONS, SECRETARY
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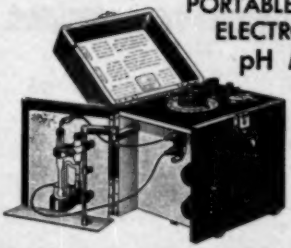

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Dental Caries...

According to the Miller acidogenic theory of dental caries,[1] acid formed in the mouth from carbohydrate foods dissolves the tooth enamel. Then, according to this concept, bacteria gain entrance to the dentine or inner portion of the tooth to complete the carious process.

Theoretically, complete elimination of fermentable carbohydrate from the diet avoids the problem. But since virtually all fruits, cereals, and vegetables contain natural sugars, in addition to the sugar added to most processed foods, such a course is impracticable and could have serious effect on general health.[2]

Among the variables involved in the acidogenic concept of caries, also, is the nature of the carbohydrate food consumed. Some foods will produce more oral acidity than others. Some foods will be retained in the mouth and around the teeth to greater extent than other foods.

Bibby, Goldberg and Chen[3] have evaluated the acid-producing properties of various items commonly consumed. They used two bases related to oral conditions found in caries-susceptible cases: (a) the amount of mouth acid produced by each such soluble-carbohydrate food, and (b) the amount of residue of each such food remaining in the mouth after the normal eating or drinking process. The product of these two gives what they have termed the "decalcification potential."

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...Foods Differ in Residue and Acid Rate

Among 105 such foods evaluated in the Bibby et al. study, soft drinks rated among the lowest in "decalcification potential," and many times lower than several common every-day articles of diet. The rating of soft drinks put them in the same category as egg noodles, zwieback, popcorn, corn chips, canned pineapple, cucumbers and cabbage. The low residue of these foods sharply distinguished them from the high residue of such foods as boiled and mashed vegetables, dried fruits, puddings, some cereals and others.

Miller's early summary of the acidogenic theory made this same distinction between carbohydrate foods. Volker[4] showed that carbohydrate solutions are rapidly eliminated from the mouth—a fact specifically recognized in the Bibby et al. study. And that has been amply confirmed by others.[5,6]

Bottled soft drinks have a nominal sugar content of 10 per cent (av.). Their 100 calories are an acceptable supplement to the basic dietary recommendations of the Food and Nutrition Board of the National Research Council. Their taste appeal encourages adequate liquid intake, while as fluids they pass quickly through the mouth and with minimal retention. And they provide that enjoyable refreshment and energy for a quick pick-up, which is their primary purpose.

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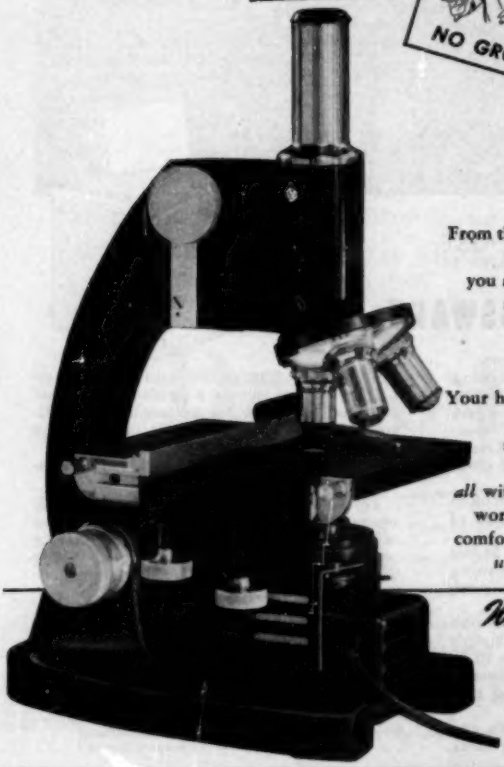

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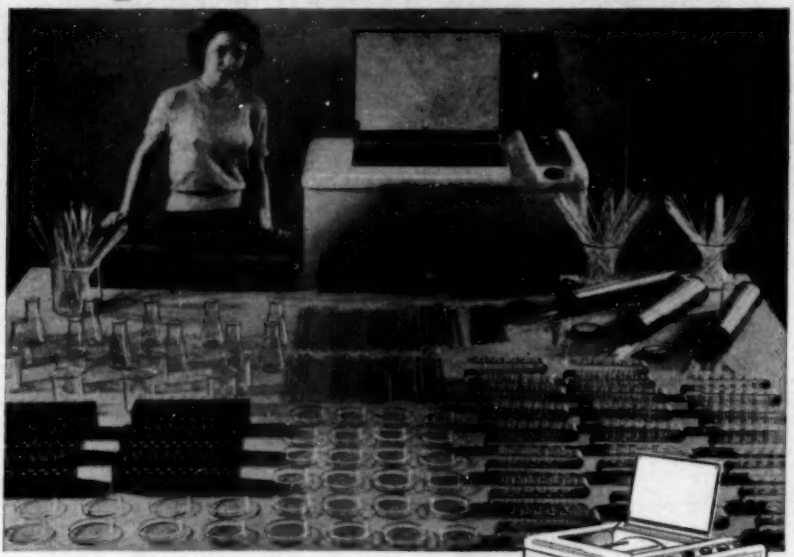

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1. Stritzler, C.; Fishman, I. M., and Laurens, S.: *Transactions New York Acad. Sc.*, *13*:31, Nov., 1950.

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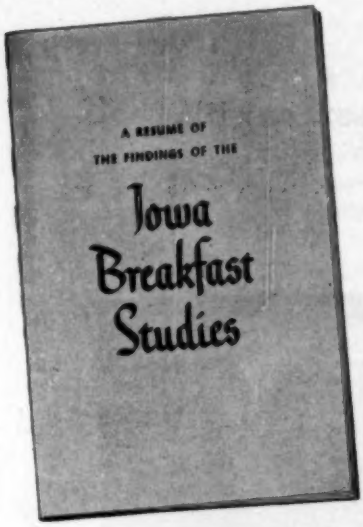

During 1948, 1949, and 1950, carefully controlled scientific studies were made on the effects of various breakfast habits in both men and women. The purpose of these studies was to learn the effects of skimping and skipping breakfast and to determine the optimal size of breakfast.

These experiments were conducted jointly by the Departments of Physiology and Nutrition at a prominent medical school. To appraise the effect of various breakfast habits upon physiologic responses specially designed equipment was used to measure choice reaction time, neuromuscular tremor, and maximum work output.

In the final study, blood sugar determinations and balance studies for the B vitamins, thiamine and niacin, the minerals, calcium, phosphorus, and iron, and for nitrogen were also made.

FROM THESE EXPERIMENTS SEVERAL PRACTICAL AND SOUND CONCLUSIONS CAN BE DRAWN:

- Breakfast is essential for maximum efficiency, both physical and mental, during the morning hours.
- Skipping breakfast results in detrimental effects, which can be reflected in decreased work output and mental acuity.
- The basic cereal breakfast, consisting of fruit, cereal, milk, bread and butter, supplying approximately one-fourth of the daily caloric need, is nutritionally a sound breakfast since it maintains certain physiologic functions at peak levels throughout the entire morning.
- The basic or medium cereal breakfast is just as efficient as a bacon and egg breakfast supplying the same number of calories.
- A breakfast supplying 25 per cent of the daily caloric need permits, in most cases, a greater work output than a breakfast supplying 40 per cent of the day's calories.
- From the biochemical studies it is apparent that from a twenty-four hour metabolic performance standpoint, the basic or medium cereal breakfast is nutritionally as favorable as the isocaloric bacon and egg breakfast.
- From the standpoint of the important B vitamins, essential minerals, and nitrogen balance (which is indicative of protein efficiency), together with the physiologic responses, it has been shown that according to biochemical and physiologic criteria, the cereal breakfast is as efficient as the isocaloric bacon and egg breakfast.

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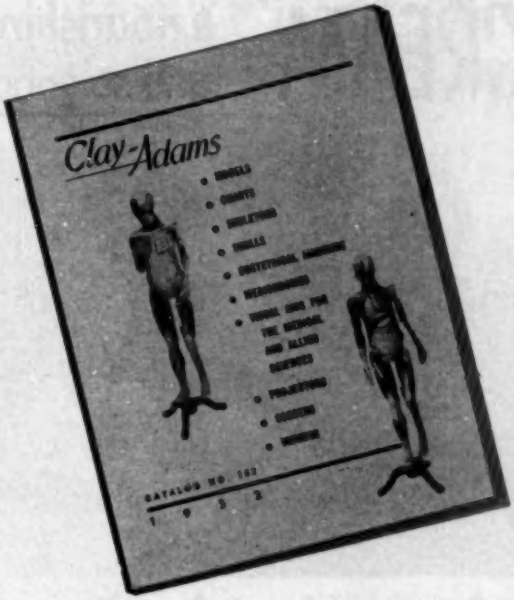

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A favorite food for all ages

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Surveys show that when people tend to decrease their food intake as they grow older, they often do so by omitting foods hard to prepare or eat. While a reduction in calories may be advantageous, there also may be an undesirable reduction in the intake of certain nutrients—particularly calcium and protein.[1]

Ice cream supplies calcium and high-quality protein, and other important nutrients apt to be lacking in limited diets. It is an excellent food for older people, for ice cream tastes good, is easy to eat, is highly digestible, and its nutrients are readily available to the body.

For the same reasons, ice cream is a good food for children, too. Children love ice cream—and frequent and continued use does not decrease its popularity. This was clearly demonstrated in a study in a boarding school, in which this food was served at least twice a week for more than a year. It was eaten with unfailing enthusiasm. Directors of the project stated that ice cream was "psychologically a great boon . . . helped lend tone to the project as nothing else could."[2]

High nutritive value plus delicious flavor—the combination makes ice cream a favorite food for all.

1. Ohlson, M. A., Roberts, P. H., Joseph, S. A., and Nelson, P. M. *Dietary practices of 100 women from 40 to 75 years of age.* J. Am. Diet. Assn. 24:286 (April) 1948.

2. Roberts, L. J., Blair, R., and Greider, M. *Results of providing a liberally adequate diet to children in an institution. I. Acceptance of foods and changes in the adequacy of diets consumed.* J. Pediatrics 27:393 (Nov.) 1945.

The presence of this seal indicates that all nutrition statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

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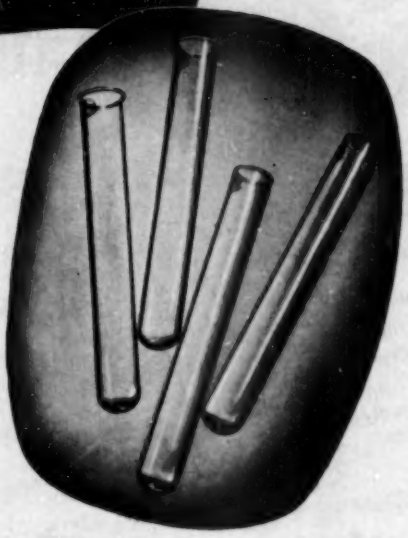

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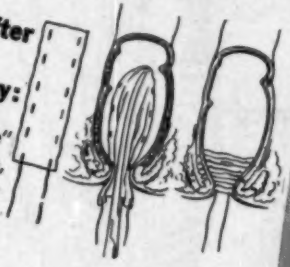
PACKING as for abscess cavity:

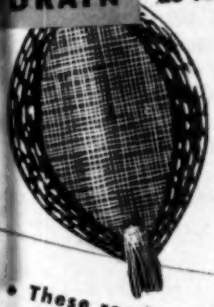
Cavity is fully but not tightly packed to permit healing from the bottom — and is repacked weekly, using aseptic precautions.

PLUG as after **hemorrhoidectomy:**



Petrolatum gauze "sponge" is (a) threaded as shown, (b) inserted beyond sphincter, (c) and then pulled down snugly against bleeding points.

DRAIN as for septic wounds:



Non-toxic, non-adherent, non-macerating—will not cause pressure necrosis or erosion...increasingly used in place of rubber drainage tubes.

• These ready-made dressings now available in three sizes:

No. 1: 3" x 36" (6 in carton)
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Obtainable from your regular source of supply

Specified for "1001" SURGICAL USES

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Sterile Petrolatum Gauze Dressings

Adopted as standard procedure by surgeons, as preferred matériel by ORS's and CSS's, these superior dressings are used as wound coverings and packings, as plugs and drains—as well as being the most widely-used definitive dressing for burns and abrasions.

CHESEBROUGH MFG. CO., Cons'd
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NEW YORK 4, N. Y.

Insist on these superior ready-made, dependably sterile dressings—for your use in indicated surgery, major or minor, emergency or elective.

VASELINE is the registered trade-mark of the Chesebrough Mfg. Co., Cons'd

"I'm convinced!"

"I run a fountain, and I've recently switched to paper service. Sure, I knew all along paper was more sanitary, but I thought my customers didn't want it, and that paper was expensive."

"I was wrong! Lily* paper service upped my volume and it cut expenses, too. I use less hot water, and my breakage and dishwashing costs are way down. The help shortage doesn't bother me, because fewer people can give better, quicker service."

"Believe me, paper service is just the shot in the arm my fountain needed."

DO FOOD OPERATORS IN YOUR CITY KNOW THAT PAPER SERVICE IS GOOD FOR BUSINESS? ORDINANCE ENFORCEMENT IS MUCH SIMPLER WHEN THE ADVANTAGES OF PAPER SERVICE ARE CLEARLY UNDERSTOOD.

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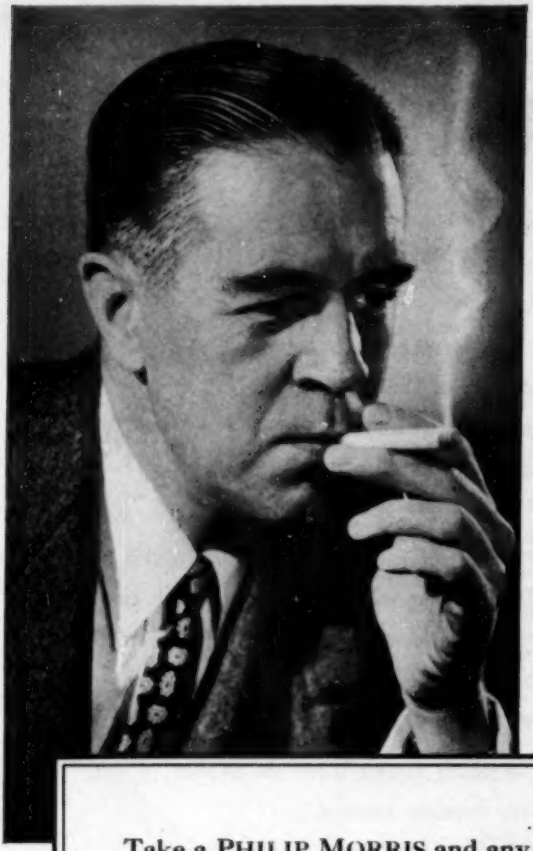


Be your own judge... try this simple test

With so many claims made in cigarette advertising, you no doubt prefer to judge for yourself.

So won't you make this simple test?

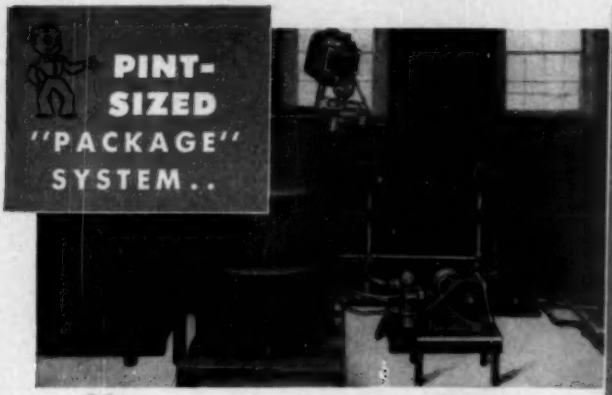
Take a PHILIP MORRIS and any other cigarette

1. Light up either one first. Take a puff—get a good mouthful of smoke—and s-l-o-w-l-y let the smoke come *directly* through your nose.
2. Now, do exactly the same thing with the other cigarette.

Notice that PHILIP MORRIS is definitely less irritating, definitely milder.

PHILIP MORRIS

Philip Morris & Co. Ltd., Inc., 100 Park Avenue, New York 17, N. Y.



DOES **MAN-SIZED** FLUORIDATION JOB!

This little %Proportioneers% "package" handles the complete fluoridation job for a town* of 12,000 people. Feeding a constant strength slurry of sodium silico-fluoride into the pumped supply, the %Proportioneers% system assures economical, safe fluoridation with minimum attention and maintenance.

Simplicity is the keynote! The fluoride slurry is fed by %Proportioneers% Midget Heavy Duty Chlor-O-Feeder . . . a low cost unit that's both easy to install and easy to operate. The concentrated slurry is fed into a bypass where it is diluted, mixed, and conveyed to the main line which feeds the elevated storage tank. Because this is a positive displacement pump, over-fluoridation is a physical impossibility. In case of mechanical failure, no condition can cause fluoridation in excess of the norm specified by the state board of health.

This system involves simple electrical hook-ups . . . a cross-connection between chemical feeder and main water pump plus a time delay circuit which starts the recirculating pump and agitator three minutes ahead of the feeder motor.

%Proportioneers, Inc.% offers many "packaged" systems for high accuracy, low cost fluoridation. Write for Bulletins SAN-9 and SM 9363-2. %Proportioneers, Inc.%, 506 Harris Ave., Providence 1, Rhode Island.

*Name of town on request.

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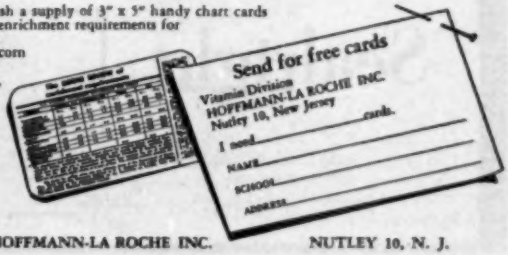
TURKISH & DOMESTIC BLEND CIGARETTES
CHOICE QUALITY
after all
the mildness
tests,
CAMEL
leads all
other brands
by BILLIONS!

What makes these good foods better?

Even though these great grain foods are staples in our diet they must not be taken for granted. They are *better* when they are enriched. The simple process of enrichment restores vitamin and mineral values which are unavoidably lost during milling. With today's great interest in food values, it is important that you recommend, or serve, not only good-tasting foods—but foods which people know are good for them. The public looks to you for guidance, so please remember this: better nutrition does not hinge on the use of trick foods. Many factors determine nutritional value. Important among these in grain foods is enrichment. You can recommend with assurance these great foods which have been enriched to official standards.

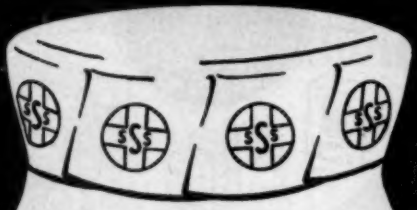
HELP FOR TEACHERS—If you wish a supply of 3" x 5" handy chart cards which tabulate the latest official enrichment requirements for white bread, white flour, farina, macaroni, and noodle products, corn meals and grits, and white rice for distribution to your students, please send your request to the Vitamin Division. Let us know how many cards you need. Of course, there is no charge.



VITAMIN DIVISION • HOFFMANN-LA ROCHE INC. NUTLEY 10, N. J.

NOW SEALON HOOD PROTECTION

Available to ALL DAIRIES



Sealright Co., Inc., now provides a one-head hooding machine especially designed for small dairy use. This smaller model of the famous Sealon Hood applying machine used by so many of the country's larger dairies, now makes it possible for all dairies to protect their milk with Sealright's sterilized tamper-proof closure which completely seals the entire pouring surface.

Another New SEALRIGHT Sanitation Feature

The ordinary water spray in dairies is of low pressure variety and attempts to wash off excess milk on bottle top with excess water. The new Sealright, high-pressure, low-water volume Dri-Spray cleans and dries bottle tops without getting into a messy dairy operation.

Sealright

Sealright Co., Inc.
Fulton, N. Y.—Kansas City, Kansas

Sealright Pacific, Ltd.
Los Angeles, Calif.

Canadian Sealright Co., Ltd.
Peterborough, Ont., Can.

For dairies not yet equipped with Sealon machines these Coverite Caps offer the best protection in closures of this type. Their precision fit, double-thick construction, wax impregnated stock all serve to keep out dirt, dust or moisture.

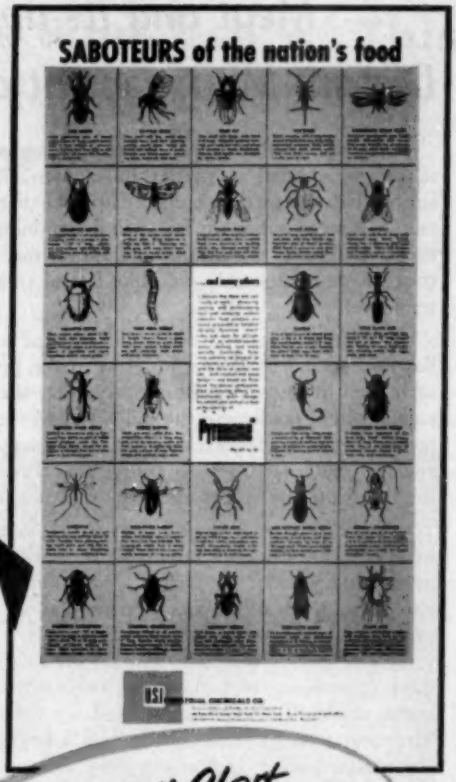
See the bugs you can kill with Pyrenone*

*Reg. U. S. Pat. Off.

These and many more pests that destroy food and annoy workers can be controlled by a program of sanitation and effective spraying with Pyrenone based insecticides. There are all kinds of sprays made with Pyrenone — aerosols, oil-base sprays, emulsifiable sprays and insecticide dusts and powders.

Know the enemy — learn how to identify the pests that cause trouble, then institute a planned program to fight them. You'll be pleased to find that Pyrenone type insecticides give effective results — economically — without hazards to employees or animals or food and milk products in processing or storage.

You can recommend Pyrenone with confidence for its effectiveness, economical results and freedom from toxic hazards.



Free Wall Chart available at your request

Write on your office letterhead for your free copy of this attractive wall chart which illustrates and describes the 28 leading pests you can control with Pyrenone.

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers Products Corporation
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Meat and its applicability in the Dietary Management of Atherosclerosis

Contrary to the former belief that serum cholesterol levels are primarily related to ingested animal fat and consequently to dietary cholesterol, it now appears that the total amount of fat in the diet, not its source or cholesterol content, is a more important factor in determining the blood cholesterol concentration.[1,2,3,4] Clinical observation has shown that ingestion of vegetable fat—which contains no cholesterol—will, like fats of animal origin, raise the serum cholesterol level.[3, 5]

Recent basic research on the influence of fats and cholesterol on human health has done much to further progress in the fight against atherosclerosis. It will serve well in dispelling the mistaken fear that reasonable amounts of foods of animal origin predispose the individual to this vascular disease.[6] As a matter of fact, a dietary inadequate in essential nutrients but providing too many calories and too much fat from *any* source may well be an important factor underlying the deposition of fat and cholesterol in the arteries and liver.

Cumulative evidence indicates that lowered blood levels of cholesterol may be effected by restricting the total fat intake.[1] Except in instances of refractory hypercholesteremia, in which a daily fat intake as low as 10 Gm. may not reduce cholesterol levels to normal, diets containing 20 to 30 Gm. of fat, or even more, often produce low cholesterol blood levels. In the clinical application of this principle, various palatable, low fat diets which supply three servings of meat daily (containing 18 Gm. of fat) have recently been suggested for the dietary management of arteriosclerosis and for enlisting the cooperation of patients.[1] The meat servings were chosen from a large variety of cuts and kinds of meat (fat trimmed off, as lean as possible). Meat adds to the eating appeal of the fat-restricted diet and contributes important amounts of biologically complete protein, the B group of vitamins including B_{12}, and food iron—all of which are important for a good state of nutrition in the atherosclerotic patient.

1. Hildreth, E.A.; Hildreth, D.M., and Mellinkoff, S.M.: Principles of a Low Fat Diet, Circulation *4*:899 (Dec.) 1951.
2. Bloch, K.: The Intermediary Metabolism of Cholesterol, Circulation *1*:214 (Feb.) 1950.
3. Keys, A.; Mickelson, O.; Miller, E.V.O., and Chapman, L.B.: The Relation in Man Between Cholesterol Levels in the Diet and in the Blood, Science *112*:79, 1950.
4. Gubner, R., and Ungerleider, H.E.: Arteriosclerosis, a Statement of the Problem, Am. J. Med. 6:60, 1949.
5. Hildreth, E.A.; Mellinkoff, S.M.; Blair, G.W., and Hildreth, D.M.: The Effect of Vegetable Fat Ingestion on Human Serum Cholesterol Concentration, Circulation *3*:641 (May) 1951.
6. King, C.G.: Trends in the Science of Food and Its Relation to Life and Health, Nutrition Rev. *10*:1 (Jan.) 1952.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

American Meat Institute

Main Office, Chicago... Members Throughout the United States

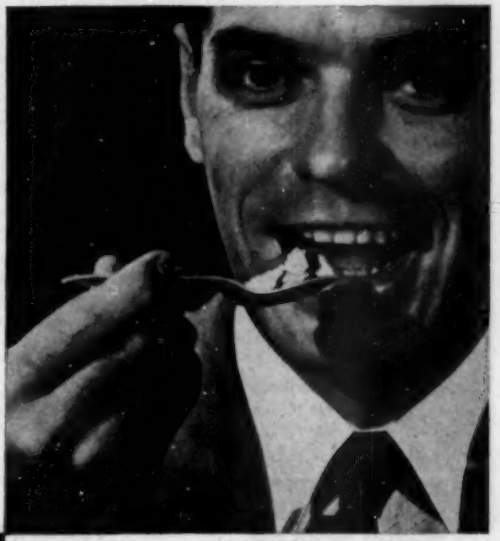
Food Vendors Find Use of This Single-Service Eating Utensil to be Profitable as well as sanitary . . .

When public health authority requires the food vendor to make use of sanitary single-service eating utensils, no hardship is imposed by OWD Ritespoons. In fact, this single service utensil often saves the enterprise from economic failure.

Vendors who have adopted OWD Ritespoon and OWD Ritefork service because of inadequate sanitizing equipment find, more often than not, that use of these utensils saves operating expense in many other ways.

The wide variety of foods and beverages that can be eaten with OWD Ritespoon and OWD Ritefork enables the vendor to drastically reduce the employment of utensils which require sanitizing equipment and the labor to operate it.

Let us send you samples of these beautiful single-service utensils that make compliance profitable to vendor as well as pleasing to the public.



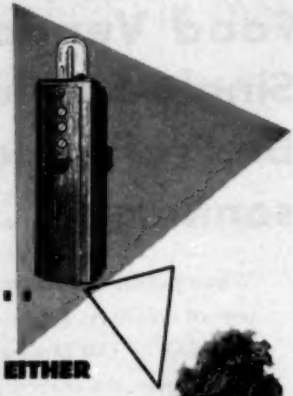
The true shape of table silver

The only single service spoon made of selected northern hardwood with the true shape and full bowl capacity of metal ware. Strong, rigid, tasteless, odorless, smooth, perfect in shape and finish. Four sizes meeting every food service need, and OWD Ritefork. In bulk cartons and cellophane over-wrapped 10 cent packages.

OWD Ritespoon

Made only by OVAL WOOD DISH CORPORATION / TUPPER LAKE, N.Y. - Graybar Bldg., New York City 17 - 31 E. Congress St., Chicago 5
THE OVAL WOOD DISH CO. OF CANADA LTD., Industrial Center No. 5, Quebec, P. Q.

THE ROOTS DON'T SHOW.....



IN W & T CHLORINATORS, EITHER

The unseen roots of a beautiful tree give it life and strength. So, too, do the unseen features back of a W&T Chlorinator—basic research, service, and a complete line of equipment—ensure dependability and trouble-free operation throughout the years.

Basic research, for example, while not necessarily essential to each particular installation, is, nevertheless, the life blood of sound equipment. W&T research developed the visible Vacuum Principle, residual recording, the Break-Point Process and countless other advances in the art of chlorination. This same research is constantly at work to insure that the W&T Equipment you buy is up-to-date in every respect and will not be outmoded before its time.

The desire for that assurance may be another reason for the ever growing demand for W&T Chlorinators.

WALLACE & TIERNAN COMPANY, INC.

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The Roots Of New Water Treatment Techniques Often Lie In W&T Research

S-69a

American Journal of Public Health
and THE NATION'S HEALTH

Volume 42 May, 1952 Number 5

Criteria for the Evaluation of the Quality of Maternity and New-Born Care*

HELEN M. WALLACE, M.D., F.A.P.H.A., EDWIN M. GOLD, M.D., F.A.P.H.A., F.A.C.S., MARGARET A. LOSTY, R.N., AND HERBERT RICH

Chief; Senior Obstetric Consultant; and Public Health Nursing Consultant, Maternity and Newborn Division; and Senior Statistician, City Department of Health, New York, N. Y.

NEW criteria for the evaluation of maternity and new-born care are greatly needed in order that both administrators and clinicians may be guided in future program planning. Such criteria should be as objective, valid, and reliable as possible and at the same time should measure the practical aspects of care which are most vital to the survival and well-being of mother and baby. This paper will present some of the criteria which, through practical experience in the field over a 7 year period, have been useful in measuring the quality of patient care. In this presentation we shall draw freely upon illustrations in New York City.

SOURCES OF MATERIAL USED TO DEVELOP CRITERIA

The material used to develop the criteria has been collected from the following sources: (1) birth, death, and fetal death certificates; (2) surveys of hospital maternity and new-born services and review of hospital records; (3) reports of data sent to the Health Department, either as required by the Sanitary Code or upon request; (4) other sources, such as national or local accrediting groups. While the material may be gathered independently from the several sources, when it is accumulated, it can be collated so that the material from one source supplements or modifies the material from other sources. A picture of maternity and new-born care in any given area will then begin to emerge.

CRITERIA DEVELOPED FROM BIRTH, DEATH, AND FETAL DEATH CERTIFICATES

Data supplied on the birth, death, and fetal death certificates afford the following useful criteria: Maternal, fetal, and neonatal mortality rates; the percentage

* Presented before a Joint Session of the Food and Nutrition, Maternal and Child Health, and Public Health Nursing Sections of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., November 1, 1951.

TABLE 1

Time of Performance of First Serological Test for Syphilis and of First Antepartum Visit, New York City

(from Live Birth Certificates filed in May, 1951)

Time of Performance	First Serological Test		First Antepartum Visit	
	Number	Per cent	Number	Per cent
First trimester	5,010	34.3	6,090	41.7
Second trimester	5,304	36.3	2,938	20.1
Third trimester	1,747	12.0	983	6.8
At delivery	716	4.9		
None	153	1.1	502	3.4
Question not answered	1,669	11.4	1,624	11.1
Old certificate used			2,462*	16.9
Totals	14,599	100.0	14,599	100.0

* Question regarding first antepartum visit was not asked on the old type of birth certificate.

of autopsies performed on maternal, fetal, and neonatal deaths; the incidence of premature birth in the conventional birth weight groups; the incidence of Rh determination and blood grouping during pregnancy; the incidence and time of initiation of prenatal care and of the serological test for syphilis; the reported incidence of obvious neonatal birth injuries and congenital malformations; the incidence of reported complications of pregnancy, labor, and delivery; the type of accoucheur doing obstetrics, and the use of obstetric consultation in indicated cases. Each of these criteria may be applied to an entire community, to individual health district jurisdictions, to the individual hospital, to the home, to racial groups, or to categories of patients, such as private and general service.

Data on the mortality rates and causes may possibly be incomplete and in some instances inaccurate, depending on the care that was taken in filling out the various items on the certificates and on the amount of transfer of patients from one hospital to another in any community. They must, furthermore, be interpreted with considerable caution because of the possibility that patients with known complications may seek care at recognized medical centers or from recognized specialists, depending on the level of public education and on the geographical availability of such care. Such data usually must be supplemented from other sources.

The following examples will illustrate the use of a few of the criteria. In Table 1, it may be seen that 41.7 per cent of the pregnant women had received antepartum care during the first trimester, 61.8 per cent by the end of the second trimester; 3.4 per cent had no care at all during pregnancy. In regard to serological testing for syphilis, 34.3 per cent were tested during the first trimester and 70.6 per cent by the end of the second trimester; 4.9 per cent had their test performed upon admission to the hospital for labor and delivery, 1.1 per cent had no test performed, and for 11.4 per cent the question was not answered on the certificate. Thus, it is known that less than half the pregnant women delivered of live babies in New York City in May, 1951, received antepartum care during the first trimester of pregnancy and one-third had a serological test performed during the first trimester of pregnancy. A small but not negligible percentage of women received no care and no serological test.

A further analysis of the first ante-

partum visit of women who delivered live babies in May, 1951, by health districts in the city reveals some remarkable variations. For women receiving the first antepartum visit during the first trimester, the percentage varies from 13 per cent in Central Harlem to 65 per cent in Staten Island; and for women receiving the first antepartum visit by the end of the 5th month, the percentage varies from 39.1 per cent in Central Harlem to 89.8 per cent in the Fordham-Riverdale section of the Bronx. The percentage of women without any antepartum care at all varies from 21.2 per cent in Central Harlem to 0.1 per cent in the Flatbush section of Brooklyn.

CRITERIA DEVELOPED FROM HOSPITAL SURVEYS AND RECORDS

Since over 99 per cent of all deliveries in New York City and 86 per cent of all deliveries in the United States occur in hospitals, it is logical to expect that criteria developed from a study of hospitals would assist in the evaluation of maternity and new-born care in a community.

From the medical aspect, some significant criteria are: the provision of qualified directors of the obstetric, newborn, x-ray, laboratory, pathology, and anesthesia departments; the degree of responsibility and authority which these directors are given and which they assume; the policies established by the directors, and the degree of director supervision, so that their established policies will be carried out; whether or not there is at least one physician on the hospital premises at all times; the qualifications of personnel routinely administering anesthesia to obstetric patients, since anesthesia has emerged as one of the major causes of maternal mortality and may be a cogent factor in asphyxia of the new-born; the hospital plan for the management of neonatal asphyxia; the provision of blood on the hospital premises at all times and the policy of routine Rh determination and blood typing during the antepartum period; the provision of means of supplying heat and oxygen in each delivery room for the proper reception of the new-born infant; the policy of where and how new-born babies are fed; the provision of individual bassinets, care of the baby on an individualized basis in his bassinet, and terminal sterilization of formulas, since these three factors may be important in the prevention of spread of neonatal infections.

In antepartum clinic care the following criteria may be useful: whether at least one qualified obstetrician attends each clinic session; the physician-patient ratio; the type of patient history taken, physical examination made, laboratory and x-ray services and counseling given for the proper evaluation of the patient's condition and progress through her pregnancy; the schedule of the patient's revisits to the clinic; the provision of a social service department within the hospital; the provision of a nutrition department within the hospital.

From the nursing viewpoint, some of the criteria are: the provision of a superintendent of nurses and her qualifications; the provision of nursing supervisors for both the maternity and new-born services and their qualifications; the ratio of nurse to both inpatient and outpatient maternity patients and to their new-born infants; the percentage of nursing staff who are registered professional nurses, in the various hospital services; the proper allocation of duties so that the most skilled type of patient care will be performed by the best-trained personnel; the program for counseling of expectant parents in the prenatal clinic; and the home follow-up of selected antepartum patients and new-born infants by the community public health nursing agency.

To illustrate the use of some of the criteria mentioned here, we will present data from surveys performed in the past

two years of 75 of the 103 hospitals in New York City having maternity and new-born services. This group of 75 hospitals comprises all the 27 proprietary hospitals, all but 2 of the 13 municipal hospitals, and 37 of the 63 voluntary hospitals; and represents 67 per cent of the total annual deliveries in New York City.

On paper, 67 of the 75 hospitals provide a qualified obstetrician in charge of the maternity service, and 72 of the 75 hospitals provide a qualified pediatrician in charge of the new-born service. Until we analyze patient care more deeply, this record appears to be a good one. However, only 55 of the 75 hospitals have policies providing that a qualified obstetrician shall be called in consultation for patients with complications or abnormal deliveries; furthermore, of the 55 hospitals having such policies, only 43 had policies which could be interpreted as well developed for the complete protection of all types of obstetric patients; and in only 33 hospitals were these policies closely adhered to. (See Table 2.)

TABLE 2

Provision of Obstetric Consultation Policies in Hospitals in New York City

Provision of Policies		*Number of Hospitals*
Consultation policies provided:		55
1. Policies Carried Out	33	
Complete Policies	30	
Incomplete Policies	3	
2. Policies Not Carried Out	22	
Complete Policies	13	
Incomplete Policies	9	
Consultation policies not provided:		17
No Information		3
Total		75

An analysis from another point of view gives us more information. In only 15 of the 75 hospitals was there daily supervision of the new-born service by the director of the pediatric service or by some other qualified pediatrician designated by him. The majority of hospitals provide a "sporadic" type of supervision with no definite plan of daily pediatric rounds, and in 5 hospitals there is no regular pediatric supervision. (See Table 3.)

TABLE 3

Frequency of Pediatric Rounds on Hospital New-Born Services in New York City

Frequency of Rounds	*Number of Hospitals*
Daily	15
Daily on ward service, sporadic on private service	2
4 times a week	1
3 times a week	3
2 times a week	3
Once a week	2
Once a month	1
"On call" only	5
"Sporadic"	34
None	5
No information	4
Total	75

Nursing care of patients presents similar problems, judging from the proposed criteria. Only 12 hospitals (16 per cent) provide two nursing supervisors, one each for the maternity and new-born services. Where nursing supervision is provided, in general it is more likely to be for the maternity service; 67 per cent of the hospitals have no nursing supervisor for the new-born service and 40 per cent have no direct nursing supervision at all. (See Table 4.)

TABLE 4

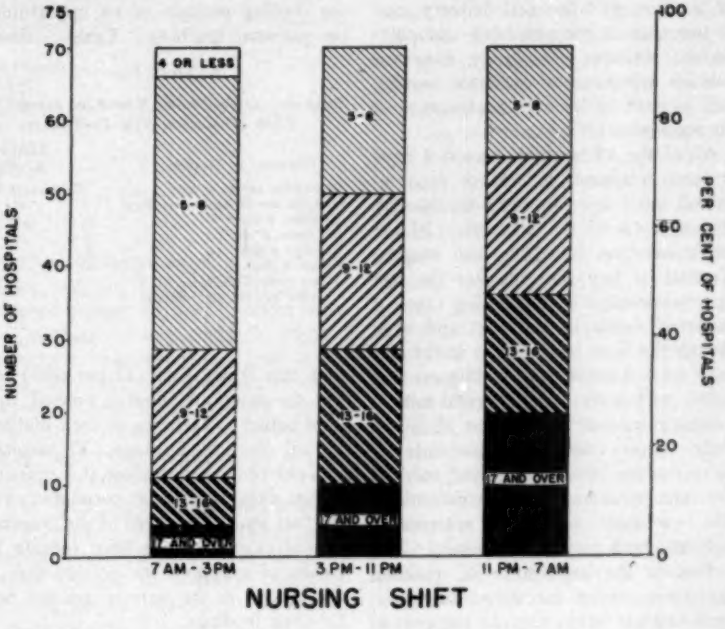
Provision of Nursing Supervision of Hospital Maternity and New-Born Services in New York City

Type of Nursing Supervision	*Number of Hospitals*
Supervisor provided for both maternity and new-born services	12
One combined supervisor provided for maternity and new-born services	7
Supervisor provided for maternity service only	24
Supervisor provided for new-born service only	3
No supervisor provided	29
Total	75

NOTE—53 hospitals (67%) have no supervision of new-born service; 29 hospitals (40%) have no supervision at all.

FIGURE 1

Average Number of New-Born Infants per Nurse, 75 Hospitals in New York City,* 1949–1951



* No data available on 5 hospitals.

The recommended nurse-infant ratio is 1 nurse around the clock for every 8 full-term infants. Figure 1 shows how hospitals meet this criterion of patient care. The greatest amount of nursing staff is provided by hospitals on the day tour, less on the evening tour, and least on the night tour. Fifty-six per cent of hospitals meet the recommended ratio during the day, 27 per cent on the evening tour, and 20 per cent at night. The highest ratio found was 1 nurse to 34 new-born babies on the night tour of 1 hospital.

No known standard exists to date for the proportion of the total nursing staff which should be composed of registered professional nurses. Such a proportion should, of course, be correlated with the amount and caliber of nursing supervision and with proper allocation of functions within a given service. For example, a staff that is composed of all registered professional nurses might mean service of the highest caliber, or might at the same time mean a wastage of skilled personnel if highly trained staff are performing some functions which can readily be carried on by clerks, aides, etc. However, within the realm of maternity and new-born care, one might expect that the most skilled nursing care would be necessary in the labor and delivery unit, in the new-born service, in the antepartum clinic, and in the postpartum service, in that order. This

analysis shows that 72 per cent of the staff in the antepartum clinic is composed of registered professional nurses, 60 per cent in labor and delivery, and 41 per cent in the new-born and postpartum services; this study does not indicate whether the available nursing staff is used to its fullest advantage in the respective areas studied.

All of the 75 hospitals except 4 have at least minimum laboratory facilities and all but 5 have an x-ray department. However, 15 of the hospitals (20 per cent) have no blood on the hospital premises at any time, despite the fact that hemorrhage is the leading cause of maternal death in the city and even though the large blood banks in the city have made known their willingness and ability to supply every hospital with a minimum amount of blood at all times. Only 45 per cent of the hospitals require routine blood typing and only 55 per cent require routine Rh determination on their registered antepartum patients, both private and clinic.

Despite the importance of qualified anesthesia service for the obstetric patient and her baby, only 23 per cent of the hospitals provide trained medical or nurse anesthetists for routine obstetrics, a situation quite different from the provisions for surgical services of most hospitals. Only 16 per cent of the hospitals have a plan for the training of medical personnel in neonatal resuscitation and provide personnel trained in this field.

Only 37 of the hospitals (49 per cent) provide an incubator or heated crib in *each* delivery room for the proper reception of new-born infants, and 12 hospitals provide none at all. Fifty-one of the hospitals (68 per cent) provide individual bassinets for infant care, but in 14 of these hospitals the babies are not cared for individually in their bassinets but common care is given, thus risking cross-infection. The method of infant feeding is of importance from several points of view—among them the prevention of aspiration of formula and death due to aspiration, and the use of the feeding periods as an opportunity for parental teaching. Table 5 shows

TABLE 5

Frequency of Feeding of New-Born Infants by Their Mothers in New York City

Frequency of Feedings		*Number of Hospitals*
All feedings except 2 a.m.		9
Some but not all daytime feedings		46
4 times a day	2	
3 times a day	3	
2 times a day	6	
Once a day	23	
Once every 2 days	1	
"Some but not all" feedings	11	
Never		20
Total		75

that only 9 hospitals (12 per cent) follow the policy of allowing normal, full-term babies to be taken to their mothers for all daytime feedings; 20 hospitals (26 per cent) never allow this practice. These data should be correlated with the fact that 97 per cent of the hospitals in the city feed new-born infants by means of propping the bottle—that is, the infants in the nursery are not held for their feedings.

Terminal sterilization of formula is performed by 80 per cent of the hospitals, which is most gratifying. Yet many hospitals vitiate this safeguard by changing nipples in the nursery before or during infant feeding.

In the antepartum clinics operated by the New York City Health Department, the standard of 1 obstetrician for every 12 patients seen per 3 hour session has been adopted and rigidly adhered to. In the survey group of 75 hospitals, 41 have antepartum clinics. Only 19 of the 41 hospitals (46 per cent) provide enough clinic physicians to meet this recommended physician-patient ratio. The highest physician-patient ratio provided is 1 physician for every 75 patients, or 2.4 minutes per patient on the basis of a 3 hour clinic session. (See Table 6.)

TABLE 6

Physician-Patient Ratio in Hospital Antepartum Clinics in New York City

Physician-Patient Ratio	*Number of Hospitals*
1:50 or more	1
1:25–49	7
1:21–24	3
1:17–20	1
1:13–16	7
1: 9–12	7
1: 5– 8	10
1:4 or less	2
No information	3
Total	41

Of the 41 hospitals with antepartum clinics, only 11 (27 per cent) provide mothers' classes; of the 30 clinics without mothers' classes, only 6 referred patients to mothers' classes held in the community. In the 6 hospitals referring patients to community mothers' classes, 3 hospitals labeled the attendance as "poor" and 3 had no knowledge of their patient attendance.

The final hospital criterion selected for illustration is the referral of antepartum clinic patients with incipient serious medical or obstetric complications to the community public health nursing agencies for home follow-up, so that there may be continuity of care between the hospital and the home. Table 7 illustrates that only 1 hospital has a policy of routine referral of such patients; 32 hospitals have no such routine policy, and 8 have a limited policy.

TABLE 7

Policy of Referral of Antepartum Clinic Patients with Complications to Community Public Health Nursing Agencies for Home Follow-up in New York City

Policy of Referral	*Number of Hospitals*
Routine referral of all patients with complications	1
Referral for cardiac or toxemia patients only	2
Referral for toxemia patients only	1
Limited referral "sometimes"	5
No routine referral	32
Total	41

CRITERIA DEVELOPED FROM DATA REPORTED TO HEALTH DEPARTMENT

Criteria developed from data reported to the Health Department include the following: the outbreaks of infection in hospital new-born nurseries; the number of reported cases of congenital syphilis and age of the child at the time of reporting; the number of expectant parents attending community parent classes; the number of antepartum patients and new-born infants visited in the home by public health nurses; the number of well babies remaining in hospitals as "boarders" because of inability to discharge them to their own homes, foster homes, or children's institutions; the number of premature infants born in hospitals inadequately equipped and staffed to care for them, the time of their transport to premature centers, the percentage of candidate premature infants who are transferred to premature centers, and premature mortality rates before and after the establishment of a premature center; and the reporting of certain children to crippled children's registers with such conditions as birth injury, congenital malformation, cerebral palsy, and epilepsy which may possibly be traceable to perinatal causes.

To illustrate these criteria, we shall present data on congenital syphilis. The increasing use of penicillin as a therapeutic agent plus the intensified epidemiological and educational programs of the Health Department have resulted in a decline of 59.8 per cent in reported cases of infectious (primary or secondary and early latent) syphilis in the general population from 1946 to 1950 in New York City. With this decline of syphilis in the general population, it might be expected that there would be the same degree of reduction in reported cases of congenital syphilis. Such is not the case, however, since from 1946 to 1950 there has been a decrease of only 13.3 per cent in the number of reported cases of

congenital syphilis. Equally important as the number of reported cases of congenital syphilis is the *age* of the child at which the condition is reported. From Table 8 it is seen that only about 20 per cent of the cases of congenital syphilis are reported in the child's first year of life. The need for better case finding during pregnancy and for better follow-up on these babies born of syphilitic mothers is apparent.

TABLE 8

Reporting of Congenital Syphilis in New York City

Year	All Ages	Under 1 Year	Per cent Reported Under 1 Year
1941	966	125	13
1942	944	144	15
1943	651	120	18
1944	572	116	20
1945	583	139	24
1946	558	123	22
1947	566	116	20
1948	645	115	18
1949	533	72	14
1950	484	85	18

CRITERIA DEVELOPED FROM OTHER SOURCES

The category of criteria developed from other sources, such as national or local accrediting groups, is of long-range significance. It is most important in the evaluation of patient care because it is primarily concerned with factors which affect the caliber of personnel giving direct care to patients. These criteria include the following: approval of hospitals by the Council on Medical Education of the American Medical Association for the general training of interns and for the training of residents in obstetrics and pediatrics; approval of hospitals by the American College of Surgeons; approval of schools of nursing by the National Nursing Accrediting Service; hospitals licensed by a state or local licensing agency, if there is a system of hospital licensure; designation of institutions as teaching hospitals because of their affiliation with a medical school, on the basis of either a direct affiliation or an indirect affiliation through a regional hospital plan.

For example, of the 103 hospitals in New York City at the present time having maternity and new-born services, only 52 (50 per cent) are approved by the Council on Medical Education of the American Medical Association for the general training of interns; only 65 hospitals (63 per cent) are approved by the American College of Surgeons; while 37 (36 per cent) are not approved by either of these two national accrediting groups.

To confine the analysis more strictly to the obstetric and pediatric fields, only 40 of the hospitals (39 per cent) are approved for the training of obstetric residents and only 18 (17 per cent) for the training of pediatric residents by the Council on Medical Education of the American Medical Association. Nevertheless, each one of the hospitals has a house staff for whose training responsibility should be taken.

COMMENTS

In reviewing the list of the above criteria developed for the evaluation of maternity and new-born care, all of them with a few exceptions are concerned with the caliber of obstetric, pediatric, nursing, social service, and nutrition personnel available to give care to patients, and with the policies for patient care established by such personnel. In the original selection of criteria for evaluation of patient care at the hospital level, selection was made on priority of importance. Similar data are available for New York City hospitals on many items of physical setup and equipment, but these items were not selected as of primary significance because as the caliber of personnel is raised, such factors in patient care begin to be solved.

One other criterion not yet mentioned

in this list is the amount of money spent by an official health agency for maternity and new-born care in a community, particularly for maternity care. Certainly many maternal deaths are still preventable, many neonatal deaths which can be traced to prenatal and natal origin are still preventable, and the entire problem of fetal wastage is as yet to a great extent unexplored. Very few communities have touched the field of preconceptional care up to the present time. Two additional problems transcend the problem of mortality: the emotional aspects of pregnancy, with the need of considerably more parent counseling both in quality and in quantity; and the prevention of certain physically handicapping conditions in children such as birth injury, congenital malformation, and cerebral palsy.

In this report a total of 43 criteria have been selected for evaluation of maternity and new-born care. Each of them is objective and has proved of practical value in the field work of the Maternity and Newborn Program of the New York City Health Department for the past 7 years by obstetricians, pediatricians, and nurses without the necessity of subjective interpretation. The next step to be taken in the use of such criteria is to subject them to analysis to establish their validity and reliability. The question of the final number of criteria necessary to evaluate maternity and new-born care should also be answered.

CMPHE Studies Public Health Fees

The Conference of Municipal Public Health Engineers is undertaking a study of fees as collected by health departments in connection with supervision of environmental sanitation facilities. This is part of a study being made by the Conference to determine what fees for sanitation inspection activities should be recommended. C. C. Potter, commissioner, Division of Public Health Engineering, Kansas City (Mo.) Health Department, is in charge of the study. The present survey is restricted to local health departments, whose coöperation is requested. Forms for reporting can be obtained from Mr. Potter.

Are Public Health Maternity Programs Effective and Necessary?*

An Analysis of 11,052 Consecutive Deliveries in Maryland

JOHN WHITRIDGE, JR., M.D., AND EDWARD DAVENS, M.D., F.A.P.H.A.

Division of Maternal and Child Health, Maryland State Department of Health, Baltimore, Md.

IN recent years many states have established and operated under the auspices of their health departments rather comprehensive public health maternity programs. The State of Maryland is among this group and has sponsored a program of this type in an ever-increasing scope for the past 23 years. These projects have required considerable expenditure of funds and effort. In many areas the justification for their institution, continuation, and expansion is being questioned by the practising physician. It would seem timely, therefore, to attempt to answer the question whether such programs are effective and whether the time and money devoted to them are justified.

There are numerous factors which should be evaluated in attempting to ascertain the effectiveness of a maternity program. Information concerning the mental and emotional well-being of mothers and children and the end results of pregnancy in terms of chronic disability, in addition to the mere fact of survival, is necessary to give a true and complete picture. Unfortunately, however, there are no data available to us which allow expression on a quantitative basis of the general well-being of the patients analyzed herein or of the varying degrees of chronic disability suffered by them. Accordingly, the only approach on which to base a rough estimate of the effectiveness of the Maryland public health maternity program lies in a study of gross mortality statistics. The following analysis is presented with full realization of the shortcomings of this type of approach. Many important questions will of necessity remain unanswered. There would seem to be, however, a logical basis for the assumption that where gross mortality statistics are favorable, the general quality of care and the broader aspects of the outcome to mother and child are likewise good.

THE MARYLAND MATERNITY PROGRAM

The maternity program sponsored by the Maryland State Department of Health for the past 23 years consists basically of a number of clinic centers located throughout most of the counties of the state, exclusive of the City of Baltimore.† The area served has a population of approximately a million and a third and is predominantly rural, there

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† The City of Baltimore is a separate administrative unit within the state and has its own health department programs. All figures relating to births, deaths, and rates in the following analysis pertain to *residents* of the counties of Maryland, exclusive of the City of Baltimore.

being only 6 towns with populations of 10,000 or more. The number of maternity clinic centers has grown gradually over the years to a total at the present time of 62 located in 22 of the 23 counties of the state. These 62 clinic centers are currently holding 118 clinic sessions per month. The amount of service furnished varies considerably from county to county. One of the larger, more densely populated counties with 13 clinic centers is conducting 21 clinic sessions each month, while some of the smaller isolated counties hold only a single clinic session monthly. In the latter instances, care is obviously inadequate and every effort is being made to increase activities to weekly clinic sessions.

The original purpose of these clinics was to provide a reasonably high caliber of maternity care to those patients who, for various reasons, were not receiving care. They were designed primarily for the indigent, or for those removed for one reason or another from access to care by private physicians. An important side effect realized from the operation of these clinics has been educational in nature. In many areas the establishment of health department clinics has undoubtedly led to a general raising of the standards of maternity care throughout the entire community. Although it cannot be expressed mathematically, this aspect of such programs should not be overlooked in assessing their value.

In the clinics described here the patient is able to obtain a complete physical examination, laboratory studies, routine chest film, advice concerning general hygiene during pregnancy, advice on social and economic matters, dietary instruction, and help in planning for delivery. The health department itself does not provide delivery service, except in a few scattered communities, where it employs certified nurse-midwives to whom patients can apply for home delivery care. Delivery planning therefore usually resolves itself into helping the patient plan for home delivery either by a physician or licensed midwife, or helping her to obtain admission to a hospital for delivery. A function of utmost importance in the clinic system is a careful and thorough screening of the abnormal from the normal patients, since it is inevitable that in the former group the greatest number of catastrophes to mother and child will occur. Since, as will be shown later, many clinic patients are delivered in their homes by midwives, this portion of the plan is vital to its success or failure. Under no circumstances is an abnormal patient knowingly approved for midwife delivery.*

Assisting in the operation of the maternity clinics in most counties are local physicians who receive a modest fee to serve as clinicians. Without their coöperation and loyal service through the years, the results to be described would not have been possible. These physicians have contributed their services at considerable personal sacrifice. The local county health officer provides clinic space, equipment, and nursing personnel from his staff. There are also several certified nurse-midwives in selected rural areas where they are most needed, a maternity nurse consultant who supervises and instructs public health nurses and midwives, and a full-time obstetrical consultant who travels from county to county examining patients and helping to arrange for the care of patients found in need of special obstetrical attention. The success or failure of any program of this type is ultimately dependent upon facilities for the proper care of patients with appreciable degrees of pathology, since it is futile to discover patients in need of

* The Maryland State Department of Health is charged by law with setting up rules and regulations for the activities of midwives. The law states that midwives must be licensed and may not accept patients for delivery until they have been examined by a physician and certified as being normal and thereby suitable for midwife delivery.

expert care without having ready access to facilities—usually hospitalization—capable of rendering the treatment needed. To this end, many years ago, a highly satisfactory arrangement was worked out between the health department and a teaching center in Baltimore providing hospitalization and expert obstetrical care to all patients with serious abnormalities.

Wherever facilities are available locally for proper care, hospitalization in Baltimore is not arranged. Although the number of qualified obstetricians practising in the rural areas of Maryland is steadily increasing, and although hospital facilities have improved, the number of obstetrical beds is limited, particularly for Negro patients, and expert obstetrical care is frequently not available. For many years the Maternal Mortality Committee, described more fully later, has stressed the urgent need for additional maternity beds for Negro patients in rural Maryland. The lack of such accommodations has undoubtedly played a vital role in causing the higher maternal mortality rate among Negro patients and gives to Health Department clinic patients a tremendous advantage in having ready access to high grade obstetrical hospital care. Table 1 gives a partial list of indications for admission to the teaching hospital over a 5 year period and illustrates the important role played by this portion of the plan. The Caesarean section rate in this group of patients was 10.4 per cent which is more than twice the hospital rate and further emphasizes the fact that the more serious types of pathology are being cared for in this fashion.

TABLE 1

Major Indications for Admission to Teaching Hospital, Maternity Clinics, Counties of Maryland, 1946–1950 Inclusive

Indication	*Number of Admissions*
Contracted pelvis	81
Pre-eclampsia	68
Chronic hypertensive vascular disease	66
Active pulmonary tuberculosis	51
Antepartum hemorrhage	49
Previous Caesarean section	40
Breech	26
Multiple pregnancy	25
Heart disease	24
Urinary tract disease	18
Poor obstetrical history	15
Prolonged or unsatisfactory labor elsewhere	14
Eclampsia	10
Elderly primigravida	8
Transverse presentation	8
Ectopic pregnancy	7
Diabetes mellitus	7
Rh negative with antibodies	7
Hyperthyroidism	4
Late puerperal hemorrhage	3
Postpartum hemorrhage	3
Abdominal pregnancy	2
Hydatidiform mole	2

SOURCE OF MATERIAL

Each county health officer submits to the Division of Maternal and Child Health an annual report of patients attending the maternity clinics in his county. The material appearing in the following analysis is a consolidation of the reports so obtained for the years 1945–1950 inclusive. The consolidated report is incomplete to the extent that seven annual county reports were not submitted, but six of the seven missing reports relate to two of the smallest counties in the state with small clinic attendance. Accordingly, the missing reports would probably add no more than an additional 250 patients to the total and would have little or no effect on the combined figures. Data relating to total births, deaths, and rates for the counties of Maryland have been obtained from the Division of Vital Records and Statistics of the Maryland State Department of Health.

METHOD OF STUDY

Data concerning clinic patients obtained in this manner have been compared to births and deaths and their respective rates in the *remaining* county residents of Maryland. Since there is a tremendous difference in the racial and, correspondingly, the economic

make-up of the two groups to be compared, both the clinic and nonclinic patients have been analyzed separately according to race. Combined rates would have little meaning. While data concerning the antepartum care, place of delivery, and attendant at delivery are complete for the clinic group, similar data are not available for the nonclinic group. A source of error is thereby introduced on a purely statistical basis but would not appear to invalidate our final conclusions. It may be true that many of the patients included in the nonclinic group received no antepartum care at all, entirely through their own lack of effort to obtain care. Furthermore, the midwife on occasion undoubtedly disregards the law and accepts for delivery patients who have not been examined and approved for midwife delivery by a physician. Fatalities in both instances would, of course, be charged to the nonclinic group and would tend to increase mortality rates accordingly.

ANALYSIS OF DATA

In Table 2 may be seen the number of patients, 11,052, attending the

TABLE 2

Patients Attending Maternity Clinics, Counties of Maryland, 1945–1950 Inclusive, by Year and Race

Year	No. of Patients	White	Negro
1945	1,334	247	1,087
1946	1,501	279	1,222
1947	1,593	341	1,252
1948	1,881	396	1,485
1949	2,261	525	1,736
1950	2,482	604	1,878
Total	11,052	2,392	8,660
Per cent of total	100.0	21.6	78.4

Health Department maternity clinics annually for the years 1945–1950 inclusive. This table shows that clinic attendance is predominantly from the Negro residents of the counties of Maryland, approximately 80 per cent of the total patients being Negroes. During the 6 year period under consideration annual clinic attendance has nearly doubled. This increase cannot be explained solely on the basis of increased birth rate but indicates that for one reason or another the county residents of the state are making greater use of health department facilities. The added number of women being served is not due in any great measure to the establishment of new clinic centers, since the number of clinic centers in 1945 was 56 and in 1950 had increased to only 62.

Table 3 presents data concerning the place of delivery and shows a steady increase in the percentage of hospital deliveries. There are two factors operating in the production of this trend, namely, better case finding and screening for abnormalities, plus a numerically more important factor, the tendency to hospitalize patients electively whenever possible; and the increase in available hospital facilities. The percentage of hospital deliveries has increased rapidly from 34 per cent in 1945 to 60 per cent in 1950. This latter figure, however, is in contrast with 88.2 per cent hospital deliveries in 1950 for the total county population and further denotes the economic status of clinic patients. There has of course been a corresponding decrease in the percentage of home deliveries both by physicians and midwives. It is of interest that the 4,200 clinic patients delivered by midwives in the home represent 41.6 per cent of total midwife deliveries (10,094) in the counties during the years under discussion. This means that the Health Department is furnishing antepartum care to approximately 2 out of every 5 patients delivered by midwives. The remaining 5,894 patients delivered by midwives presumably received antepartum care from private physicians and all deaths occurring in this group appear among the nonclinic patients.

Table 4 indicates the outcome of

TABLE 3

Number of Maternity Clinic Patients, by Place of Delivery, Counties of Maryland, 1945–1950 Inclusive

Year	Total Number of Patients	Place of Delivery			
		Hospital	Home, by Physician	Home, by Midwife	Unattended *
1945	1,334	454	191	655	34
1946	1,501	606	187	691	17
1947	1,593	720	196	660	17
1948	1,881	1,050	224	590	17
1949	2,261	1,267	189	789	16
1950	2,482	1,497	153	815	17
Total	11,052	5,594	1,140	4,200	118
Per cent of total	100.0	50.6	10.3	38.0	1.0

* Includes abortions

TABLE 4

Result to Fetus, Maternity Clinic Patients, Counties of Maryland, 1945–1950 Inclusive

Year	Number of Mothers	All Births [a]	Result to Fetus				
			Alive at 1 Month	Neonatal Deaths [b]	Fetal Deaths [c]	Abortions	Unknown
1945	1,334	1,349	1,246	30	43	22	8
1946	1,501	1,505	1,395	39	34	23	14
1947	1,593	1,601	1,493	37	44	27	0
1948	1,881	1,892	1,748	42	54	24	24
1949	2,261	2,296	2,185	34	48	26	3
1950	2,482	2,499	2,328	53	67	24	27
Total	11,052	11,142	10,395	235	290	146	76

[a] Includes abortions and multiple pregnancies
[b] Liveborn, dying during first month of life
[c] Stillborn

pregnancy among the 11,052 clinic patients and contains the basic data for the rates in the tables which follow. The 76 births of unknown outcome are due to failure of the local county health department to make a complete follow-up to determine whether or not the infants were still living at the age of one month. If these 76 births had terminated in fetal or neonatal deaths, they would in all probability have been so reported. Although it is highly probable, therefore, that these 76 births resulted in children living at one month, they have been excluded in the tabulation of rates in the following tables. Mortality rates by year have not been entered in Table 4, since there is no demonstrable sustained trend during the 6 year period. With regard to abortions, the figures have little meaning, since in a program of this type most patients do not report for care until they have reached a stage of pregnancy at which abortion is unlikely.

If the 146 abortions and 76 infants whose ultimate fate is unknown are excluded, there remain 10,920 births for which complete data are available, or 2,377 white and 8,543 Negro births. In Table 5 the 2,377 white births in clinic patients have been compared as regards fetal and neonatal mortality rates with nonclinic white births. It can be seen that the rates in the two groups are virtually identical, and no conclusions can

TABLE 5

Summary of Fetal and Neonatal Mortality Rates, White Births Only, Counties of Maryland, 1945–1950 Inclusive

	Health Department Clinic Patients		Nonclinic Patients		
	Number	Mortality Rate per 1,000 Total Births	Number	Mortality Rate per 1,000 Total Births	Ratio of Rates, Clinic/Nonclinic
Births	2,377	—	157,438	—	—
Fetal deaths [a]	45	18.9	2,941	18.7	1.01
Neonatal deaths [b]	47	19.8	3,013	19.1	1.04

[a] Stillborn
[b] Liveborn, dying during first month of life

TABLE 6

Summary of Fetal and Neonatal Mortality Rates, Negro Births Only, Counties of Maryland, 1945–1950 Inclusive

	Health Department Clinic Patients		Nonclinic Patients		
	Number	Mortality Rate per 1,000 Total Births	Number	Mortality Rate per 1,000 Total Births	Ratio of Rates, Clinic/Nonclinic
Births	8,543	—	18,162	—	—
Fetal deaths [a]	245	28.7	865	47.6	0.62
Neonatal deaths [b]	188	22.0	646	35.6	0.61

[a] Stillborn
[b] Liveborn, dying during first month of life

be drawn, particularly since the two groups compared differ greatly in number. It can be assumed, however, that the white clinic patients are from the lowest economic segment within their race, and perhaps on this basis the equality of results is noteworthy.

In Table 6 the same procedure has been followed in analyzing the 8,543 Negro births. It is apparent that the results obtained in clinic patients are significantly better than in the Negro nonclinic group. As regards both fetal and neonatal deaths, the rate among clinic patients is less than two-thirds that in the nonclinic group. The same results are obtained in regard to the outcome to the mother, as shown in Table 7, the mortality rate associated with pregnancy in patients obtaining their antepartum care elsewhere being 50 per cent higher than among clinic patients.

Closely associated with health department activities in the field of maternal care for the past 15 years has been the Obstetric Section (Maternal Mortality Committee) of the Maternal and Child Welfare Committee of the Medical and Chirurgical Faculty of Maryland. This committee, representing the physicians of Maryland, has carefully reviewed every death associated with pregnancy, and wherever possible a decision is reached concerning preventability and responsibility. Data concerning these deaths have been obtained from the files of this committee.

TABLE 7

Summary of Mortality Rates in Mothers, by Race, Deaths Associated with Pregnancy, Counties of Maryland, 1945–1950 Inclusive*

	Health Department Clinic Patients		*Nonclinic Patients*		
	Number of Deaths	*Mortality Rate per 10,000 Total Births*	*Number of Deaths*	*Mortality Rate per 10,000 Total Births*	*Ratio of Rates, Clinic/Nonclinic*
White	0	0	135	8.6	0
Negro	14	16.4	45	24.8	0.66

* Includes maternal deaths, plus deaths due to associated conditions in which pregnancy had an effect, such as heart disease and pregnancy, diabetes and pregnancy.

It should be noted that the term "deaths associated with pregnancy" is herein employed rather than "maternal deaths." This has been done to avoid as much as possible differences of opinion and definition resulting from recent changes in classification. It is also felt that the more inclusive term gives a more accurate picture of maternity care. By so doing, the total number of deaths in all county residents for the 6 years is increased by 15 and accordingly produces variation with the official maternal mortality rates compiled by the Division of Vital Statistics.

Of the 14 deaths associated with pregnancy in clinic patients all occurred in Negro patients. In only 2 cases were the patients under the care of a midwife. This fact indicates that the screening process employed before allowing a midwife to deliver a patient is effective. The adult mortality rate among mothers in clinic-midwife deliveries is 4.7 per 10,000 total births, compared to 15.3 per 10,000 total births in all other midwife cases. In only 3 of the cases under review did there seem to be any basis for considering prenatal clinic care faulty. In these 3 cases, more astute observation or more thorough follow-up probably would have prevented the fatal outcome. In all other cases, the responsibility for the fatality lay either with the patient for failure to coöperate, the attending physician, or the hospital staff for faulty therapy.

COMMENTS

Consideration of the foregoing material can well become involved in numerous controversial aspects of medical care today, but in an effort to confine discussion to the question originally posed, the following brief comments are submitted. There should be no competition between public health department and private physicians in the realm of clinical medicine, but rather a coöperative effort on the part of both groups to provide the best possible medical care for *all* segments of the population. It is obvious that in providing medical care there is a certain "no man's land," namely, the care of the indigent and near-indigent. The question of prime importance here is whether this no man's land belongs within the scope of health department activities or lies solely within the realm of private medicine.

The data presented indicate that, for the present, some ancillary service for patients in the low-income group is necessary and that the health department in Maryland appears to be best equipped to render this service in the field of maternity care. With the cooperation of practising physicians and with its clinic centers, consultation facilities, and ready access to a high

quality of hospital obstetrical care, the health department has achieved better results among low-income patients than has the private practitioner alone. Since no details are available concerning care received by the nonclinic group in the analysis made here, it may be argued that the figures cited are heavily weighted against the private physician. The nonclinic group includes approximately 6,000 patients delivered by midwives, plus an undetermined additional number of mothers who, because of geographic isolation, failure to seek care, or poor health education, may have received little or no professional care. If true, this argument means simply that *either* the private physicians, *or* the health department, or *both* must expand the scope of their activities to provide adequate care for *all* low-income patients. Once the private physicians are willing and able to furnish a brand of care to this group equal or superior to that which the health department, in coöperation with physicians, has demonstrated its ability to provide, the need for clinical services by health departments will disappear. In the meantime, however, there seems little justification for the private physician's skepticism of health department activities in this field.

SUMMARY AND CONCLUSIONS

1. A brief description of the Maryland public health maternity program has been presented. The salient features of the program are a widespread system of maternity clinic centers, facilities for antepartum care, consultation facilities, and a satisfactory plan for hospitalization of patients with abnormalities. Coöperation from practising physicians has been of vital importance.

2. Data concerning the outcome to 11,052 pregnant women given antepartum care in these clinics over a 6 year period, 1945–1950 inclusive, have been analyzed. Approximately 80 per cent of these patients were Negroes and 38 per cent of them were delivered in their homes by midwives. The percentage of hospital deliveries is increasing rapidly, being 60 per cent in 1950.

3. Clinic and nonclinic births in the counties of Maryland have been compared for both white and Negro births. Among the white births, fetal and neonatal mortality rates were virtually identical in the clinic and nonclinic groups. In Negro births, however, the fetal mortality rate in clinic patients was 28.7 per 1,000 total births, as compared to 47.6 per 1,000 total births in nonclinic patients. Similarly, the neonatal mortality rate was 22.0 per 1,000 total births in clinic patients, as against 35.6 per 1,000 total births in nonclinic patients.

4. Results to mother were likewise significantly better in clinic than in nonclinic patients, the mortality rate in white mothers being 0 in clinic patients and 8.6 per 10,000 total births in nonclinic mothers; and in Negro patients 16.4 per 10,000 total births in clinic patients compared to 24.8 per 10,000 total births in the nonclinic group.

5. On the basis of the data presented, it is felt that the Maryland Health Department, with the coöperation of private physicians, is for the present better equipped to render adequate maternity care to low-income groups than is the private physician alone. Until the latter is willing and able to furnish equally good care to low-income patients, the continuation of the present program by the health department is necessary.

ACKNOWLEDGMENT—The authors wish to express their thanks to Dr. A. W. Hedrich, Chief of the Division of Vital Records and Statistics, for his valuable help in the preparation of the statistical tables.

Social and Economic Factors Affecting the Mother and Child*

DUGALD BAIRD, M.D., F.R.C.O.G.

Professor of Obstetrics, University of Aberdeen, Aberdeen, Scotland

REPRODUCTION is fundamentally influenced by heredity but it is also greatly affected by custom, tradition, standards of education, and economic factors. The influence of heredity is difficult to study in man and is not discussed in this paper, which deals only with the social factors affecting reproductive performance.

It is important to consider the patient in relation to her home. This is often forgotten in these days when so much investigation and treatment are carried out in hospital, where the patient is in abnormal surroundings and may react very differently from the way she would at home.

We may postulate that the highest grade of reproductive efficiency means high fertility, very good health and a sense of well-being during pregnancy, freedom from any of the recognized complications, spontaneous delivery of a live and vigorous child, normal involution, and successful lactation. How far short of this standard any particular person may fall and why are very difficult to determine accurately.

The following results were obtained from a study of 881 primigravidas (excluding those having twins) who booked for hospital confinement, attended the antenatal clinic, and were subsequently delivered in hospital in the year 1950 (see also Table 1). It shows that 29 per cent were admitted to the antenatal inpatient department, 26 per cent had complications of labor, and 9 per cent had complications of the puerperium. In aggregate, just over 50 per cent had one or more complications. The mother embarking on her first pregnancy obviously has reason for apprehension as well as joy, even when the services of specialists and the resources of a well equipped teaching hospital are readily available.

TABLE 1

Study of 881 Booked Married City Primiparas, Excluding Twins, Aberdeen Maternity Hospital, 1950

Group	*Percentage*
Treated in antenatal wards	29.2
Labor involving operation under full anesthesia, blood transfusion, or major postpartum hemorrhage	26.8
Puerperal complication involving discharge after 10th day postpartum	9.0
Stillbirths and neonatal deaths in hospital	3.6
Infants retained in special nursery more than 14 days	4.7
Percentage of total number of cases involved in the above groups	53.3

The Midwifery Department of the University of Aberdeen, with the Medical Research Council, is trying to determine the conditions under which physiologically normal reproduction is the rule rather than the exception. The method used is to compare the reproductive performance of groups of women who live in contrasting conditions and

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to determine by analysis which factors are important for insuring that normal reproduction has the best chance of being maintained.

A simple method is to compare the records of patients attending a private nursing home with those of maternity hospital patients. The degree of medical skill available for patients in each group is not dissimilar. The nursing home cases have paid a fairly large fee, whereas the hospital cases are treated free. Most nursing home patients can afford quite a comfortable mode of life. They usually live in good homes with modern conveniences, eat a varied and nutritious diet, receive a good education, and can command a wide range of interests and activities. Most of them come from small families, prefer to postpone marriage (or at least childbirth) until they possess a home and an adequate income, and plan to rear a limited family which will receive "all the advantages." By contrast, many of the poorer hospital patients live in small and overcrowded homes with few conveniences, are less well fed, receive a minimal education, and have rather limited interests and activities. They often come from a large family, marry young (often after conception), and in their turn may rear a large family under adverse conditions. Does this contrast in background make any difference to the obstetrical record? And if so, what are the most important factors?

The most casual examination shows that the private patients are taller, healthier, and more coöperative and knowledgeable than the hospital patients. For example, 25 per cent of the hospital patients and only 5 per cent of the private patients were under 5 ft. 1 in. tall. The private patients were at least 5 years older, on the average, than the hospital patients.

We know that the size of the pelvis, especially the area of the brim, increases directly with the height of the woman, so that we would expect much more difficulty in the hospital patients from contracted pelvis, and this is the case. This effect, however, is overshadowed by the adverse effect of age in the private patients. Our studies have shown that labor is quickest, easiest, and most efficient in the 15–19 age group and that the incidence of difficult labor and instrumental interferences rises steadily with age. For example, the incidence of spontaneous delivery in less than 24 hours falls from 80.7 per cent in those under 20, to 26.6 per cent in those over 35 years of age. Unfortunately, also, in the elderly primiparas there is a much greater tendency for intrauterine death of the fetus to occur either before or during labor so that, should labor be long, the risk of stillbirth is very great. For these reasons Caesarean section is now used frequently in the elderly primigravida to insure a live child. While the risks of Caesarean section are now very slight, it does lessen the chances that the patient will have another child. This factor of age explains why the Caesarean section rate is nearly three times as great in the private as in the hospital patients.

We have placed a great deal of reliance in our studies on the height distribution of the population. We think that in Scotland very few women under 5 ft. 1 in. in height are so small by reason of heredity. The Registrars General in Britain have classified the population into classes or groups. The classification is largely, although not entirely, on an income basis. Social Class I includes the upper professional classes, while Social Class V consists of those who are out of work or employed on unskilled labor. The proportion of women under 5 ft. 1 in. rises from 9 per cent in Social Class I to 26 per cent in Social Class V. Of 108 women medical students, 4 were found to be under 5 ft. 1 in. and 60 over 5 ft. 4 in. In 50 of the students, the father belonged to Social Classes III, IV, or V, but it should be

noted that the average size of the family of upbringing was the same in each Social Class, namely 2.5. The average size of the family of upbringing for Social Class V in Aberdeen as a whole is 5.5 children, so that it is clear that the parents of the students who belonged to Social Classes III–V were not representative for their class.

It seems probable that where the parents have intelligence and a reasonable amount of money and are ambitious for their children, very few of the daughters are under 5 ft. 1 in. in height. Since it is seldom necessary to perform Caesarean section for disproportion between the head and the pelvis in anyone over 5 ft. 1 in., serious disproportion could almost be eliminated if all children were reared in a healthy environment by sensible parents.

Analysis of stillbirths in the hospital and nursing home groups shows that the rates are very similar but the neonatal mortality is much less in the nursing home group. Since the age distribution of the two groups is so dissimilar, primigravidas of the same age must be compared to show the effect of the different social background on fetal mortality.

TABLE 2

Stillbirth and Neonatal Death Rates Among Booked Primparas Aged 20–24, in Two Contrasted Groups (Twins Excluded)

	Still-births	*Neonatal Deaths*	*Combined Death Rate*
Aberdeen Maternity Hospital, 1949–1950 (898 cases)	2.23 (20 Deaths)	1.78 (16 Deaths)	4.01 (36 Deaths)
Private Nursing Home, 1946–1950 (202 cases)	0.99 (2 Deaths)	0.50 (1 Death)	1.49 (3 Deaths)

Table 2 shows that the stillbirth rate in the nursing home group is less than one-half and the neonatal mortality about one-third of that in the hospital group. In both groups fetal mortality was much lower in tall than in small women and, in fact, among tall women of 20–24 in the nursing home group fetal mortality was only 11.5 per 1,000.

The hospital patients were graded physically by the obstetrician at the time of the first visit to the Antenatal Clinic, and among those graded as having poor health and physique, fetal mortality was subsequently found to be twice as high as among those whose health and physique were graded as good. The tall women were usually assessed as being in much better health than the small women, but within each height group the women graded as of superior health and physique subsequently showed a much lower fetal mortality. The same was true of prematurity. Tall women experienced less prematurity than small women, and within each height group prematurity among those of superior physique was half the percentage of prematurity found in those of poor physique.

In the age group 20–24 the incidence of complementary or bottle feeding at the time of discharge from hospital rose from 10.5 per cent of those in the best physical grade to 26.2 per cent among those of poorest physique and health. All these women received the same standard of antenatal and postnatal care, so that the different results are due to difference in the health, physique, and intelligence of the individual patient.

The following are some of the characteristics of the two income groups:

Low-Income Group

Small stature
Poor physical grading
Flat pelvis
Poor functional grading (hygiene poor and knowledge limited)
Prenuptial conception
Poor housing
Greater risk of premature labor
Greater risk of fetal death
Easy labor because of youth

Repeated pregnancies, sometimes even when each labor is very difficult, as may happen if the pelvis is contracted
Premature aging

High-Income Group

Tall
Good physical grading
Round or long pelvis
Good functional grading
Prenuptial conception seldom
Good housing
Slight risk of premature labor
Less risk of fetal death, although the rate is higher than it might be because of large proportion of elderly primigravidas
Higher incidence of long labor from dysfunction because of age
Number of subsequent pregnancies carefully controlled
Aging process much slower

NEEDS OF PREVENTIVE HEALTH SERVICE IN OBSTETRICS

(a) *Higher Income Groups*—It is obvious that the type of maternity service necessary depends on the type of community being considered. In a prosperous community the women are tall and healthy, so that contracted pelvis is rare, but many start their families at a comparatively late age and so are prone to prolonged labor because of dysfunction. Whether this is entirely due to age or whether there are psychological factors as well is difficult to determine. Research is needed which will lead to a better understanding of the causes and treatment of dysfunction. Although it is beyond the scope of the obstetrician to alter social customs so that professional and middle class women can have their children while they are young, any trend in this direction is to be encouraged. Health education in this group presents no particular problem, but it may be difficult to prevent overanxiety.

(b) *Lower Income Groups*—Obstetricians on the whole have been rather slow to realize that many of the serious abnormalities which they see are really social diseases and need not occur, given reasonable living standards. Three out of every four stillbirths in the lower income groups are due to conditions preexisting in the mother before the onset of labor and only one to the hazards of birth. Prematurity, the most important cause of neonatal death, is much more common in the lower income groups. Therefore the greatest scope for lowering the fetal mortality lies in improving the environment in its widest sense, not only during pregnancy but from birth to maturity.

Fortunately, most of those in the lower income groups are young at the time of birth of the first child (under 25 years of age), so that labor is usually quick and easy. In some, however, because of contracted pelvis, difficult labor due to disproportion occurs. Many of the children are rather feeble and less able to stand the strain of even a spontaneous delivery than a strong, healthy child. Large families are still quite common, particularly among the very poorest, worst educated, and least intelligent members of the community. Many of these women have their babies at home under most unsuitable conditions and sometimes despite a very bad obstetric history. They often make no effort to prevent pregnancy, although it may be obvious from every point of view that they should have no more children. It has been calculated that about 7 per cent of families are so feckless that no preventive health service can really cope with them effectively, but there are many who can be helped.

Some of the preventive measures required in the lower income groups are better diet and living conditions in the growing years; more health education in schools, supplemented by training for motherhood and childbirth during the antenatal period; and extension of postnatal services to include advice on family planning. A great deal of hard work is required and the results cannot be very easily seen or appreciated by those actively engaged, since it takes a genera-

tion for them to show their full effects. Great progress has been made in Britain in the last 15 years along these lines and one of the striking features of the war years was the rapid fall in the stillbirth rate, which was much too sudden and too great to be explained by advances in obstetric technique. There is still much to be done in the large industrial areas.

We are replacing the old system, where pregnancy and the care of the child are governed by traditions, with a new system of rigid adherence to instructions laid down by medical and nursing experts. The result has been a great increase in the standard of physical health. Care must be taken to avoid the danger of creating anxieties and mental illness. Some countries have almost succeeded in eliminating poverty and malnutrition as a cause of fetal death and have raised the standard of living to a very high level. Sweden, for example, has not only done this but has also what may be termed a very enlightened social policy far in advance of most other countries. It is disconcerting to learn, therefore, that the birth rate in Sweden is still below replacement level and that divorce and suicide rates are high, suggesting psychological instability and possibly a lack of faith in the future. Those countries striving to eliminate the obvious wastage of lives and health due to malnutrition and ignorance must give careful thought to the danger which may accompany such reforms.

Korea Veterans Among Civilians

The Veterans Administration has announced that as of January 31, 1952, there were 655,000 living veterans returned to civilian life who saw military service in the Korean conflict. This represents an average discharge rate of nearly 35,000 a month for the 19 month period. Many of the since-Korea veterans saw service during World War II.

On the same date, 135 veterans disabled in service since June 27, 1950, were being rehabilitated under the Vocational Rehabilitation Act. Of these, 99 were in school training; 4 in institutional on-farm training, and 32 in job training. Hospitalization was being provided for 1,862 Korea veterans.

As of December 31, 1951, a total of 3,988 Korea veterans were drawing compensation for service-connected disabilities or pension for nonservice-connected disabilities.

Nursing Aspects of Good Maternity Care*

ALMIRA KUTZER, R.N.†

Instructor and Public Health Nurse, Junior College of Contra Costa County, California

IN maternity care today, parents are requesting more and more understanding of childbearing. The nurse, with her professional preparation and her many contacts with the patient in the hospital, the clinic, the doctor's office, and the public health field, is called upon to meet this need of the parents.

Since nurses serving in these various positions felt inadequately prepared to function in this teaching capacity and wanted help, the California State Department of Public Health believed it important that its maternity nursing consultant work directly with these nurses in local communities.

The following is a description of some of our attempts to meet the existing needs.

In X County, the public health nurses felt that they needed to know what maternity patients were learning in the hospitals and clinics, in order to increase the effectiveness of their teaching. Consequently, a survey was made of all hospitals and clinics in which patients served by the Health Department receive maternity care. A guide was set up to aid the nurses in their visits to the hospitals and clinics. Their findings were tabulated on a large worksheet, which showed the nursing procedure for the care of the mother and babe and what the mother was directly or indirectly taught in relation to that care.

When the results of the survey were reviewed, it was found that hospital nursing procedures varied widely, as did the teaching in the clinics and the hospitals. This material was presented at a staff meeting to which the hospital and clinic personnel were invited.

Following this meeting, nurses asked for a maternity nursing conference to enable them to share their thinking about the care of the maternity patient, to learn about new developments in maternity care, and to discuss their agency programs. The conference, which the writer conducted, was held for four days, and it was attended by about 30 nurses from hospitals, clinics, doctors' offices, schools, and public health agencies.

During the conference, reproduction was reviewed and discussed from the standpoint of how this material could best be utilized for meeting some of the needs of the maternity patients and their families. Nursing care procedures were analyzed to determine the basic principles underlying each procedure. These principles also need to be understood by the patient, who may be giving herself care during her short stay in the hospital; and the effectiveness of the home care of mother and baby depends, in large part, upon the family's understanding of the basic principles or the "why" of that care. If the family understands the relationship of rest to

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* Presented before a Joint Session of the Food and Nutrition, Maternal and Child Health, and Public Health Nursing Sections of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., November 1, 1951.

† Formerly Maternity Nursing Consultant, California State Department of Health.

involution the mother will be more apt to get that rest. In parents' classes, following a discussion on postpartal care, husbands have been overheard saying, "We can have mother help when you come home," or "I can get my vacation then and take over."

Following a discussion of the findings in the survey, questions were raised by the nurses as to why there was such a great diversity in care. Mrs. Jones goes to hospital A, where perineal care is a highly complicated process of forceps solutions and containers. Her neighbor goes to hospital B, where care is simplified and she is taught about clean hands and given a technique that carries out the basic principles involved. This simple care can be continued in the home as readily as in the hospital. These neighbors raise the same question: Why was there such diversity in care?

The area of baby care was approached by reviewing the type of questions parents asked doctors and their office nurses. The public health nurses stated what appeared to cause anxiety in the parents of new babies. Some of the problems centered around cord care, care of circumcision, crying, feeding, pseudo menstruation in baby girls, and acceptance of the baby by other members of the family. The group decided that many of these problems could be minimized or prevented by nurses.

Many other topics pertaining to maternity care were discussed by the group. Plans were suggested to form a standing committee composed of representatives of the nursing groups present at the conference. This committee would serve to coördinate agency efforts to meet the problems as presented in the conference. Specific suggestions were:

1. Information would be more effectively transferred through a referral system from agency to agency to provide a continuity of care which most effectively meets the needs of each individual patient.
2. The committee would serve as a medium for the clarification of agency responsibility in the teaching of specific care. As an example, the nurse who is meeting the patient during pregnancy is the one who can best help the patient prepare her breasts for nursing; the nurse in the hospital is the one who is on hand to help the mother begin her breast feeding experience with confidence.
3. The committee would give leadership in determining how the improvement of record-keeping could result in better patient care, which would include teaching.
4. The committee would take the responsibility for planning periodic maternity nursing conferences.

In Y County, requests from practising physicians for public health nurses to teach expectant parents' classes resulted in planning for another maternity nursing conference. This conference grew from a single agency request to include nurses from three neighboring rural counties, schools, a V. N. A., doctors' offices, the city health department, and the county health department. Each hospital sent nursing representatives, and about 15 stimulating and enthusiastic student nurses attended. One conference was given for two and a half days and was repeated the following week in order to accommodate the greatest number of nurses.

Participants in the conference raised these questions:

1. How can we really get the whole family to participate in the childbearing experience?
2. Haven't we been giving lip service to this idea?
3. Does the school have a special responsibility here? If so, how does it go about fulfilling this responsibility?

It was suggested that in the school, selected films could be shown to P. T. A. groups to increase their understanding of some phases of family living and to initiate the development of family education programs for the students. Individual and group conferences with students, parents, and teachers could serve to correct misinformation and modify attitudes. In the parents' classes as well as in other situations, grandparents

and other members of the family could be invited to participate. In many instances, if grandparents are given status instead of being labeled old-fashioned, they can contribute to the enrichment of family living rather than create frictions. Mothers, and whenever possible fathers, need to be helped by the nurse to enable them to help the rest of the family understand and meet this experience.

Since one physician in this community was using the principles of natural childbirth in his care of patients, the nurses had a special interest in this subject. The discussions revealed that there was a great deal of misunderstanding of the principles involved in this concept. Ways of incorporating some of the principles of preparation for childbirth in the teaching of patients were developed. Some members of the group pointed out that each nurse meeting the patient might contribute to her understanding of childbearing so that she could meet this experience with confidence and satisfaction. Others suggested that the hospital plan for someone to be constantly with the patient in labor and to utilize members of the family whenever possible.

However, the major concern of the nurses was centered on their own need to increase their effectiveness in teaching. In response, an Instructor's Training Course in Red Cross Home Nursing Unit II—Mother and Baby Care—was given in coöperation with the Pacific Area Red Cross and the local Red Cross chapter. The nurses who participated in the conference and the training course stated that they had gained confidence in fulfilling their roles as nurse instructors. It was evident to all of us that there was need for participation in this program of parent education by other professional groups, such as the nutritionists, the psychiatrists, marriage counselors, doctors, and social workers.

Following are given a few examples showing what our meetings and conferences produced:

Referral systems were set up in communities where they did not formerly exist, and in other communities there is now a better exchange of information about patients.

One nursing director stated that following the meetings, the number of antepartal and postpartal nursing visits to patients rose to an all-time high and remained at that level. Nursing supervisors reported a marked improvement in recording.

In the communities where parents' classes are conducted, frequent reports come from the field nurses to the effect that parents who have participated in the classes are enjoying their families and seem to have less anxiety in relation to mother and baby care than do parents who have not had this type of experience.

The writer's own observations while working with these groups were:

In each group the need was expressed for a standing committee which would provide continuous community evaluation of the maternity care program. It was also felt that this committee should not be limited to nurses, but should include all professional workers who see the maternity patient; and that it is important to have specialist leadership available from the state or the district.

The question was frequently asked: Can every nurse be a group instructor? The answer seems to be that there are certain qualifications to be met. The nurse must feel comfortable working with groups, must have special interest in this field, and must have a sound background of content and experience upon which to draw. Each nurse, by the nature of nursing, is teaching. Therefore, it is important that she will have learning experiences that will enable her to do effective teaching.

Does the nurse also need to know how to evaluate and modify nursing practice?

This is the kind of help nurses are asking for. Should we expect the nurse to have this awareness and ability as a teacher and as an evaluator when she graduates from the basic course? Until such awareness and such ability have been developed in the basic course or in adequate postgraduate preparation, nurses will continue to need assistance in order to meet the needs of today's parents.

National Health Council Meets

The quality of the local health services in a community depends on the willingness of citizens to work together to get such services. This was the recurring theme in the first two day annual meeting of the National Health Council in New York, March 13 and 14.

In three half-day panels the community health council idea was explored. From various parts of the country, active workers in local or state health councils brought news of happenings in their areas. Out of these discussions some of the basic principles of health council organization were developed. A council, by whatever name it is called locally, is a group of people representing the various community interests, who together find out what their own health problems are and plan to meet their needs. Team thinking, team planning, team action, were what got results, whether in Scott County, Missouri; Washington County, Maryland; or Columbus, Ohio.

The Program Development Committee of the National Health Council, under the chairmanship of A. W. Dent, president of Dillard University, constituted a panel on "Health Planning for the Future." This panel agreed that the Council should expand its field service in support of citizens' movements for local health services and councils. Expansion of the National Health Library to serve as the public health library for the entire country; a journal for the exchange of information on community health planning; and promotion of the National Citizens Committee for WHO were other projects to be developed, provided funds can be secured.

Three additional agencies—the American Veterinary Medical Association, the International Association of Lions Clubs, and the Equitable Life Assurance Society—were elected to active, associate, and sustaining membership respectively. The Council now has 42 members, more than double the number it had in 1948.

Speaker at the public luncheon on March 13 was Willard L. Thorp, Assistant Secretary of State for Economic Affairs. His theme was the importance of health to the peace of the world and its relation to social and economic progress. His address is to be published and will later be available in reprint from the Council.

The following officers were elected at the business session of the 32nd annual meeting:

President: Mrs. Oswald B. Lord, chairman, U. S. Committee for the UN International Children's Emergency Fund

President-Elect: Dr. Robin C. Buerki, executive director, Henry Ford Hospital, Detroit, Mich.

Vice-Presidents: A. W. Dent, president, Dillard University, New Orleans, La., Margaret A. Hickey, Public Affairs Editor, *Ladies Home Journal*, Basil O'Connor, president, National Foundation for Infantile Paralysis

Secretary: Mefford R. Runyon, executive vice-president, American Cancer Society, Inc.

Treasurer: Philip R. Mather, president, American Social Hygiene Association

Assistant Treasurer: Herbert I. Wood, vice-president, Chase National Bank

Effect of Milk and Cream on the Thermal Inactivation of Human Poliomyelitis Virus*

ALBERT S. KAPLAN AND JOSEPH L. MELNICK

Section of Preventive Medicine, Yale University School of Medicine, New Haven, Conn.

IN view of the fact that certain epidemiological studies [1-3] have implicated milk as a possible vehicle for the transmission of human poliomyelitis, it is important to know whether the official minimum temperatures required for the pasteurization of milk (61.7° C. or 143° F. for 30 minutes, or 71.1° C. or 160° F. for 15 seconds) are adequate for the destruction of various strains of this virus. Scant attention has been given this problem, with the exception of a study on the thermal inactivation of murine strains of poliomyelitis virus in milk.[15] The thermal inactivation of viruses in general, however, has been studied widely, and it appears that certain of these infectious agents are relatively thermolabile, some being inactivated upon mere standing at room temperature; while others are more thermostable, withstanding temperatures as high as 94° C. for five minutes.[4-7] The thermal death time of poliomyelitis virus as naturally present in human material has not been determined accurately, and many of the experiments were carried out about 35 years ago, when insufficient numbers of experimental animals were used to allow quantitation and virus titrations were rarely carried out.

More than 40 years ago, Leiner and von Weisner [8] reported that heating poliomyelitis virus at 60° C. for 15 or 20 minutes, or at 50° C. for 60 minutes rendered it noninfective for monkeys. Flexner and Lewis [9] found that after heating Berkfeld filtrates of infected spinal cords of monkeys at temperatures ranging from 45–50° C. for 30 minutes, the filtrates were incapable of causing paralysis when injected intracerebrally. Romer and Joseph [10] showed that crude virus suspensions were no longer active when heated at 50° and 55° C. for 30 minutes. Virus suspensions heated at 45° C. for 30 minutes remained infective. Kling and Pettersson [11] inoculated monkeys intracerebrally with crude virus suspensions heated at 40°, 45°, 47.5°, and 50° C. for 30 minutes; only those monkeys given virus heated at 47.5° and 50° C. survived. Abramson [12] reported that a 10 per cent virus suspension in physiological saline inoculated subcutaneously remained infective if heated at 50° but not at 55° C. for 30 minutes. Using a Berkfeld filtrate of a 10 per cent saline suspension of infected monkey cord, Howitt [13] found that heating at 55° and 58° C. destroyed the virus; however, the time of heating was not given.

The results reported by the workers just cited indicate that poliomyelitis virus is destroyed by heating for 30 minutes between 45° and 60° C. The variable results obtained were probably due to the lack of uniformity in the design of the experiments, with little consideration given to the number of infectious doses of virus used.

The report of Shaughnessy, *et al.*,[14]

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and the more recent paper of Lawson and Melnick[15] are far more extensive. The former group employed the Aycock strain of poliomyelitis virus in their experiments. Using a water bath accurate to within 0.5° C. to heat Berkfeld filtrates of the virus suspended in physiological saline, they found that 4 paralyzing doses of virus given intracerebrally plus 10 paralyzing doses given intraperitoneally to monkeys remained infective after heating for 30 minutes at 50° C. but was inactivated at 52.5° C. Lawson and Melnick carried out their experiments with the SK murine strain of poliomyelitis. They used between 300 and 1,000 LD_{50} doses of virus, in the form of infected cotton rat brain and cord, which was heated for 30 minutes in a water bath accurate in a range of 0.5° C.; it required a temperature of 50° C. to inactivate virus suspended in water and 60° C. for virus suspended in milk.

Because of the results of the experiments on heat inactivation of poliomyelitis virus in water or physiological saline, the general view has prevailed among most workers that the virus would be as easily destroyed in milk as it is in water, and consequently heating at pasteurization temperatures would render poliomyelitis virus noninfective. That this might not be necessarily true, however, is indicated by results obtained from thermal inactivation studies with bacteria. Pathogenic bacteria in milk *are* destroyed at pasteurization temperatures;[16, 17] however, it is well known that other bacteria are generally more resistant in milk than in water. Peiser[18] and Brown and Peiser[19] found that milk provides a protective effect in their studies of thermal death times of *Streptococcus lactis, Escherichia coli,* and several other milk bacteria. These organisms were destroyed at different temperatures, depending on the media employed. The temperature necessary to sterilize the cultures in 10 minutes was lowest in broth (for example, *E. coli* was destroyed at 69.5° C. and *S. lactis* at 64° C.), from 2° to 4° C. higher in whey, 4° C. higher in separated milk, 8° C. higher in whole milk, and 12–14° C. higher in cream. The possibility that these substances might exert the same kind of effect on human poliomyelitis virus has not been investigated, although, as mentioned above, work carried out with murine virus demonstrated a protective effect by milk.

In continuation of this work, the present paper is devoted to a study of the thermal inactivation of human and murine strains of poliomyelitis virus suspended in water, milk, cream, and ice cream. Emphasis has been placed on experiments using human feces from poliomyelitis patients as a source of virus.

MATERIALS AND METHODS

VIRUSES

1. *Human Poliomyelitis Virus*

A. *Fecal material*—Human feces being the richest natural source of poliomyelitis virus, the stools of patients in the acute phase of the disease were therefore used in the heating experiments. Stools were collected from patients during epidemics which occurred in North Carolina and in New York City in 1948, and in Hartford, Conn., in 1949; these three strains have been designated NC 1948, NY 1948, and Hartford 1949, respectively. All this material was frozen immediately after collection and was maintained at −20° C. until used.

B. *Monkey-passaged virus, Texas 1948*—This strain was isolated from flies trapped during an epidemic in southern Texas in 1948 and had been passed once in monkeys.

2. *Rodent Poliomyelitis Virus*

A. *Y-SK strain*—This virus was originally isolated from the feces of a patient with abortive poliomyelitis and was adapted in our laboratory to cotton rats and mice after 21 passages in mon-

keys.[20] The strain used in these experiments had been passed 5 times in cotton rats.

B. *Lansing strain*—This strain of virus and Y-SK are homotypic; however, there appear to be certain differences between them[21] and for this reason both have been included in these heating experiments. The Lansing strain used was received originally from Dr. Charles Armstrong of the U. S. Public Health Service in 1943 as glycerolated CNS of mice representing the 240th passage of virus. It had been passed 35 times serially in mice in our laboratory when employed for the present experiments.

PREPARATION OF VIRUSES

1. *Human Poliomyelitis Virus*

A. *Fecal material*—Feces to be used in the heating experiments were prepared in the following manner: The stools were thawed and a 33 per cent suspension was made with water in a Waring blendor; the resulting mixture was then spun in a Sharples supercentrifuge at 25,000 r.p.m. for 20 minutes. The supernatant fluid thus obtained was further clarified by spinning at 18,000 r.p.m. for 20 minutes in the 6 inch rotor of the International PR-1 refrigerated centrifuge. Concentration was secured by centrifugation in an ultracentrifuge at 40,000 r.p.m. for 60 minutes (average gravitational force, 100,000 × g). Of the pellets obtained from these centrifugations in the ultracentrifuge, one-half were resuspended in water, using one-tenth the volume of supernate, the other half either in milk, cream, or ice cream. These concentrated virus suspensions are considered throughout these experiments to be undiluted and all titrations of virus infectivity were carried out on that basis. The undiluted virus suspensions of the three strains each had a PD_{50} titer in monkeys of about $10^{-2.5}$ and were used undiluted for the heating experiments; they contained about 300 PD_{50} doses per 0.6 ml.

In addition to concentrated virus suspensions, crude stools in milk were also tested. Fecal material was ground in a mortar, milk being added gradually to make a 1 per cent suspension. Four ml. amounts were distributed to 5 ml. ampules, which were then sealed and heated as described below. After being heated, these suspensions were clarified and concentrated in the ultracentrifuge as indicated above, except that in this instance the pellets were resuspended in water and again clarified by centrifugation at 18,000 r.p.m.

Most of the bacteria present in stools were removed by the 18,000 r.p.m. centrifugations, the sediments of which were discarded. However, in order to be sure that those organisms which might have remained would cause no untoward effect when inoculated intracerebrally into monkeys, 0.1 ml. of a solution containing 2,000 units of penicillin and 10 mg. of streptomycin was added to each ml. of virus suspension after heating. This precaution was enforced with CNS material as well, in order to decrease the bacteria present in the dairy products.

B. *Texas 1948*—A 33 per cent suspension of infected spinal cord was made with sterile distilled water in a chilled Waring blendor. To 3.0 ml. of this cord suspension, 7.0 ml. of either water or milk were added and the mixture was ground in a mortar; this 10 per cent suspension of spinal cord was diluted in half with the respective medium and then spun lightly to sediment the tissue debris, the supernates being used as a 5 per cent suspension of infected cord for the heating experiments. The titer of this strain was $10^{-3.5}$ in monkeys and the heated suspension contained about 150 PD_{50} doses of virus per 0.6 ml.

2. *Rodent Poliomyelitis*

A. *Y-SK strain*—This virus was used as cotton rat CNS, its LD_{50} titer being $10^{-4.0}$ in cotton rats and $10^{-2.8}$ in mice

(an average of 6 titrations*). A pool of a number of infected cotton rat cords and brains was thoroughly ground without abrasive until a homogeneous mass resulted. To one portion, enough sterile distilled water was added to make a 10 per cent suspension; to other portions, milk, cream, or ice cream were added in place of water. When inoculated into cotton rats, the 10 per cent heated suspension contained about 1,000 LD_{50} doses, and in mice about 60 LD_{50} doses.

B. *Lansing strain*—The preparation of the Lansing strain for the heating experiments was carried out as indicated for the Y-SK strain. In cotton rats this strain had a titer of $10^{-4.2}$ and in mice a titer of $10^{-3.9}$, 4 titrations being carried out, so that the animals were inoculated with about 1,100 and 800 LD_{50} doses of virus per 0.03 ml., respectively.

Heating: (1) *holding method*—Aliquots of 4 ml. of the stool suspensions and 2 ml. aliquots of CNS tissue in their respective media were distributed into 5 ml. and 3 ml. glass ampules, respectively; these ampules were then sealed and kept in the refrigerator or in an ice water bath before being heated. For purposes of heating, they were placed in weighted wire basket containers, 10 cm. in length and 3.8 cm. in diameter; the mesh was 6 mm.—sufficiently large to permit the free passage of water into the container. The baskets were closed by means of a wire mesh lid to which a string was attached. The basket with the enclosed ampules was then plunged into the constant-temperature water bath, remaining submerged for 15 or 30 minutes; at this time they were withdrawn and immediately dropped into an ice water bath. The temperature of the water bath was recorded by a thermometer graduated in 0.1° C. and was accurate to 0.05° C.

Heating: (2) *High-temperature short-time method*—Aliquots of 4 ml. of stool suspensions were placed in stainless steel tubes 7.6 cm. in length and 1.6 cm. in diameter, the tubes being sealed with a stainless steel cap. The tube was set in a basket made of the same material as described above but of greater size, the length being 10 cm. and the diameter 7.6 cm. To this basket was attached a second stainless steel tube into which an equal volume of water was placed and a thermometer inserted through a watertight rubber stopper. The entire basket was set into a water bath at 73° C. and was shaken, while being heated, by means of an attached wooden handle. In 60 seconds, when the temperature inside of the attached tube had reached 71.1° C., the basket was quickly transferred to a second bath, the temperature of which had been maintained at 71.1° C. The basket, with the tube containing the virus suspension completely submerged in it, was kept there for the desired holding time and then plunged into an ice water bath. This technique of "high-temperature short-time" (HTST) pasteurization was not considered sufficiently accurate for our purposes and was abandoned in favor of a second method allowing a more rapid transfer of heat to all the virus particles and which eliminated the necessity of transfer from one bath to another.

Thin U-shaped glass capillaries with an average outside diameter of 1.71 mm. and with a length of 40 cm. (about 1.5 ml. in volume) were considered more adequate for the purpose of high-temperature short-time pasteurization. The capillaries were filled with the virus suspensions and both ends sealed. These capillaries were tied with cotton thread, by means of which they were lowered into a water bath maintained at 71.1° C.; immediately after heating, the capil-

* The higher titer of virus in cotton rats is in conformity with that reported earlier from this laboratory for the Y-SK strain.[8] Recently, Bodian, *et al.*, have made a similar observation for the Lansing strain,[9] although with the Lansing virus used in our present experiments we found no significant differences in titer of virus in cotton rats as compared to mice.

laries were dropped into an ice water bath.

Among other things, one of the advantages of using these capillaries was the fact that the time required for the heat to penetrate to the centrally located particles could be estimated. It was determined by means of a constant, 1.17, used in the formula derived by Dr. Arthur Long [24]:

$$1.17 \times (\text{outside diameter in mm.})^2 = \text{time lag in seconds}$$

Since the capillaries employed had an average outside diameter of 1.71 mm., the value 3.4 seconds was computed as being the time lag. Thus, if capillaries were to be heated for 15 seconds, it was necessary to add 3.4 seconds to the holding time, which meant keeping them in the water bath for 18.4 seconds to insure complete heat penetration.

The water bath employed for the HTST pasteurization method was accurate to within 0.05° C., the temperature of the bath being controlled by a differential linear expansion thermoregulator. The same thermometer previously mentioned was used for these experiments.

Suspending media—Virus was suspended in raw milk for the heating experiments. The raw milk, Grade B, was obtained from a local dairy and was used as such in the heating experiments without further treatment. Pasteurized heavy cream was purchased on the open market. The ice cream mix (nonaerated) had been pasteurized before being used for the heating experiments.

Phosphatase tests—In order to follow the extent of pasteurization, phosphatase tests were carried out on the milk suspensions after heating by the method of Sanders.[25]

Determination of virus activity—After the stool suspensions (or monkey cord suspensions) were heated, 0.6 to 0.8 ml. aliquots of the suspensions were inoculated intracerebrally into monkeys. Most of the test animals were rhesus (*Macaca mulatta*) monkeys; however, in several instances cynomolgous (*M. cynomolgus, M. irus*) and African green (*Ceropithecus aethiops sabaeus*) monkeys were used. In some cases the milk precipitated after heating, and rather than inject this with possible injurious effects to the animals, the material was spun at 18,000 r.p.m. for 20 minutes as described in the foregoing. The resulting sediments were resuspended in the original volume of water and 1.0 ml. amounts were inoculated intraperitoneally at the same time that the supernatant fluid was inoculated intracerebrally. Titration of unheated virus was also carried out by intracerebral inoculation, tenfold serial dilutions being made with water. The animals were observed for a period of 30 days for signs of poliomyelitis. Monkeys which survived the 30 day period without paralysis and which did not show the characteristic lesions in the spinal cord were considered negative. Monkeys with signs of the experimental disease were sacrificed, and all animals designated as having poliomyelitis had the diagnosis confirmed histologically.

The rodent strains of poliomyelitis virus were inoculated in 0.03 ml. quantities into 3–8 week old Swiss mice and 4–6 week old cotton rats. The animals were observed for a period of 4 weeks. Deaths which occurred during the first two days after inoculation were considered nonspecific. A few animals showing questionable signs were sacrificed and a suspension of the brain and spinal cord was passed to a new group of mice for confirmation of the diagnosis.

EXPERIMENTAL RESULTS

1. *"Human Poliomyelitis" Virus.*

A. *Holding method*—As indicated in Table 1, poliomyelitis virus from human fecal material subsequently suspended in water or milk is destroyed when heated at 61.7° C. for 30 minutes, the conditions generally employed for pasteuriza-

TABLE 1

Thermal Inactivation of "Human Poliomyelitis" Virus Derived from Suspensions of Human Fecal Material

Strain	Temperature (°C.)	Temperature (°F.)	Time (minutes)	Milk Phosphatase Test *	Fate of Monkeys Inoculated With Virus Heated in: Water	Milk	Cream	Ice Cream
NC 1948:	61.7	143	30	6	0/3†	0/3	0/3	0/7
	61.7	143	15	36	0/4	0/4	—	0/4
	55	131	30	>1,000	0/4	0/4	—	6/7
	55	131	15	>1,000	0/4	0/4	—	5/6
	50	122	30	>1,000	2/13	8/10	—	4/4
	50	122	15	>1,000	0/7	5/6	—	—
NY 1948:	62.7	145	30	—	—	—	0/3	—
	61.7	143	15	36	0/4	0/4	—	—
	55	131	30	>1,000	0/2	0/4	—	—
	50	122	30	>1,000	0/4	4/4	—	—
	50	122	15	>1,000	0/4	3/3	—	—
			High-Temperature Short-Time (seconds)					
NC 1948:	71.1‡	160	15	ND	0/4	0/4	—	3/3
	71.1‡	160	0	ND	0/2	1/3	—	—
	71.1	160	15	8	0/4	0/4	—	—
	71.1	160	7.5	>1,000	0/4	0/4	0/4	0/4
NY 1948:	71.1	160	7.5	>1,000	0/4	0/4	0/4	0/4
Hartford 1949:	71.1	160	15	8	0/4	0/4	—	—

* The results of the phosphatase tests are expressed in mg. of phenol equivalent per 0.5 ml. of milk, following the method of Sanders.[35] According to this test, properly pasteurized milk should yield no more than 2 mg. of phenol equivalent per 0.5 ml. of sample.

† The numerator indicates the number of monkeys infected and the denominator the total number of monkeys inoculated.

‡ Virus suspensions were heated in stainless steel tubes; it required 60 seconds to reach 71.1° C.

ND = not done.

tion. If, however, the temperature is lowered to 50° C., then milk exerts a protective effect on the virus. At this temperature only 10 per cent of the animals inoculated with the NC 1948 strain heated in the presence of water exhibited the experimental disease, whereas of those animals inoculated with virus heated in the presence of milk, 81 per cent were paralyzed. For the NY 1948 strain, the difference was even more striking—all the animals inoculated with virus heated in the presence of water at 50° C. survived, and all those given virus in milk came down with poliomyelitis. These tests indicate a margin of safety by this method of pasteurization of about 7° C. or 12° F. By margin of safety, we mean the difference in degrees centigrade between the standard prescribed minimum temperature and the lowest point to which the temperature may be lowered and still cause thermal inactivation of virus. It is of importance to note that the virus is destroyed at lower temperatures than the milk phosphatase. It may be noted that virus in the presence of both cream and ice cream was inactivated at milk pasteurization temperatures. It was only at temperatures below those used for pasteurization that ice cream prevented the destruction of the virus, for example, when heated at 55° C. for 30 minutes.

B. *High - temperature short - time method*—Experiments using stainless steel tubes showed that when the NC 1948 strain was held at a temperature of 71.1° C. for 15 seconds, virus was inactivated whether suspended in water or milk. If these tubes containing the virus were allowed to reach 71.1° C. (1 minute heating required) and immediately cooled in an ice bath, then virus in milk was not completely inactivated.

The results in Table 1 show also that by this method ice cream protected the virus to such an extent that in one experiment all the monkeys inoculated came down with poliomyelitis, even when virus was held at 71.1° C. for 15 seconds.

HTST pasteurization in glass capillaries completely inactivated 3 strains of virus in the form of fecal material, regardless of the medium employed. As in the case of the holding method, the milk phosphatase proved more heat-resistant than the virus, the enzyme surviving at temperatures at which virus was no longer detectable. As indicated by the data given in Table 1, heating by the capillary method at 71.1° C. for a period as short as 7.5 seconds was adequate for the inactivation of poliomyelitis virus, allowing a safety factor of at least 7.5 seconds, since 71.1° C. for 15 seconds is the minimum standard for this method of pasteurization.

C. *Heating of virus in the form of crude stools in milk*—The NC 1948 and NY 1948 strains in this form were inactivated when heated at 61.7° C. for 30 minutes. Of 8 monkeys inoculated with these heated viruses, none came down with the disease. These animals are in addition to those listed in Table 1.

2. *Poliomyelitis Virus in CNS Tissue*

A. *Holding method*—The experiments carried out with the Texas 1948 monkey-passaged virus in its first passage in monkeys follow the results obtained with poliomyelitis virus in the form of fecal material. Heating at 50° C. for 15 minutes inactivated virus when suspended in water but not when suspended in milk (see Table 2). At 45° C. virus survived in water as well as in milk.

The same general pattern of thermal inactivation also obtains with the rodent strains of poliomyelitis. Both the Y-SK and Lansing strains heated in the presence of water, milk, cream, or ice cream were inactivated under the conditions of pasteurization. However, the results again show the protective effect of milk against heat inactivation of the Y-SK strain of poliomyelitis, for about 50 per cent of the number of cotton rats and mice developed poliomyelitis when inoculated with virus heated in the presence of milk at 50° C., whereas all the animals inoculated with virus heated in the presence of water escaped infection.

B. *High - temperature short - time method*—That the Y-SK and Lansing strains in milk are inactivated at the temperatures employed for this type of pasteurization is evident from the results given in Table 2. Heating at 71.1° C. both in water and in milk for just 7.5 seconds was sufficient to inactivate these two strains, allowing a margin of safety of at least 7.5 seconds.

However, this method of pasteurization is not adequate for virus suspended in cream. When heated at 71.1° C. for 15 seconds, these two strains remained infectious for cotton rats and mice. As shown in Table 2, heating at this temperature for as long as 20 or 30 seconds does not inactivate the Lansing strain suspended in cream. It was necessary to increase the holding time to 45 seconds before virus was no longer detectable. The protective effect of cream was even more marked in the case of the Y-SK strain—destruction of virus occurred only after holding the sample in the water bath for 180 seconds.

RECAPITULATION

1. Human poliomyelitis virus as present in fecal material from poliomyelitis patients, when suspended in water, milk, or ice cream, was destroyed at pasteurization temperatures, 61.7° C. (143° F.) for 30 minutes and 71.1° C. (160° F.) for 15 seconds.

2. Poliomyelitis virus, as present in spinal cord of infected monkeys suspended in the same media, was also destroyed at temperatures generally used for pasteurization.

3. The thermal death time of human

TABLE 2

Thermal Inactivation of Poliomyelitis Virus in CNS Tissue

Strain	Temperature		Time	Milk Phosphatase Test	Fate of Animals Inoculated with Virus Heated in						
					Water		Milk		Cream		Ice Cream
	(°C.)	(°F.)	(minutes)		Monkeys		Monkeys				
Texas, 1948	50	122	15	>1,000	0/4		1/3				
	45	113	30	>1,000	3/4		4/4				
					Cotton Rats	Mice	Cotton Rats	Mice	Cotton Rats	Mice	Cotton Rats
Y-SK	71.1	160	30	ND							0/7
	71.1	160	15	ND							0/8
	62.7	145	30	ND					0/4		
	62.7	145	15	ND					0/7		
	61.7	145	15	36			0/6				
	55	131	30	>1,000			0/3	0/8			
	50	122	30	>1,000	0/4	0/23	4/7	13/26			
	47.5	117.5	30	ND	1/6*						
Lansing	71.1	160	30	ND							0/3
	71.1	160	15	ND							0/7
	62.7	145	30	ND					0/6		
	62.7	145	15	ND					0/5		0/8
	55	131	30	>1,000	0/2	0/15	0/3	0/11			
	50	122	30	>1,000	0/4	0/26	0/4	0/19			
	47.5	117.5	30	ND	0/6						
				High-Temperature Short-Time							
			(seconds)								
Y-SK	71.1	160	180	ND					0/8		
	71.1	160	120	ND					5/8	5/20	
	71.1	160	60	ND					4/8	7/12	
	71.1	160	45	ND					7/9		
	71.1	160	30	ND					3/5		
	71.1	160	20	ND					6/8	5/10	
	71.1	160	15	8	0/6		0/6		4/8	15/26	
	71.1	160	7.5	>1,000	0/5		0/5		11/11	2/4	
Lansing	71.1	160	45	ND					0/10	0/15	
	71.1	160	30	ND					1/4		
	71.1	160	20	ND					1/6		
	71.1	160	15	8	0/5		0/6		5/10	7/14	
	71.1	160	7.5	>1,000	0/4		0/5		8/12	10/14	

* The brain of this cotton rat proved infective on passage in mice.
Footnotes as in Table 1.

fecal poliomyelitis virus in water was found to be between 50° C. and 55° C. (122° F. to 131° F.) when heated for 30 minutes. The thermal death time of passage poliomyelitis virus in water was between 47.5° C. and 50° C. (117.5° F. to 122° F.), the exposure being 30 minutes.

4. Milk, cream (about 38 per cent fat), and ice cream (12 per cent fat and 38 per cent total solids) exert a protective effect on virus. Human poliomyelitis virus heated at 50° C. (122° F.) for 30 minutes was protected by milk and at 55° C. (131° F.) by ice cream. Milk prevented the destruction of rodent-adapted virus when it was heated at 50° C. (122° F.) for 30 minutes. Rodent-adapted virus was protected by cream when it was heated by the high-temperature short-time method, virus surviving at 71.1° C. (160° F.) from 30 to 120 seconds.

5. With a holding period of 30 minutes, and considering 61.7° C. to be the "standard" temperature, there is a safety factor of about 7° C. (12° F.) for virus heated in milk by the holding method, and less than 5° C. (9° F.) for virus suspended in ice cream. At least 7.5 seconds at 71.1° C. (160° F.) constituted the margin of safety for virus suspended in milk heated by HTST pasteurization, considering 15 seconds as the "standard" time.

6. The Lansing and Y-SK strains of poliomyelitis virus apparently differ in their thermostability. The Lansing strain suspended in milk is inactivated by heating at 50° C. (122° F.) for 30 minutes. The Y-SK strain resists thermal inactivation under the same conditions. This also occurred in the high-temperature short-time method: The Lansing strain suspended in cream was inactivated at 71.1° C. (160° F.) only after a holding time of 45 seconds; the Y-SK strain remained infectious until it had been held in this temperature for 180 seconds.

DISCUSSION AND CONCLUSIONS

It appears evident from the results obtained that the pasteurization of milk by the holding method as carried out in our experiments is adequate for the destruction of poliomyelitis virus.* This is true regardless of the source of virus, be it human fecal material or infected spinal cord. It is also noteworthy that our experiments were performed with quantities of virus from human sources which were in excess of what one would expect to find as a potential source of contamination in nature. Although the presence of milk, as opposed to water, influences the thermal destruction of virus, this protective effect was most pronounced at temperatures of 55° C. or less in the holding method. The greater efficiency of ice cream as a protective agent is analogous to the effect found by Brown and Peiser for bacteria.[19] It must be pointed out, however, that these dairy products had little protective effect on the virus at the temperature generally used for pasteurization by the holding method.

Virus, concentrated from human fecal material or as present in infected spinal cord, was also inactivated in milk, cream, and ice cream by high-temperature short-time pasteurization, in which heat penetration was assured. With questionable penetration of heat, virus appeared to persist in ice cream presumably heated at 71.1° C. for 15 seconds.

Cream was striking in its protective action of rodent-adapted virus. The Lansing strain in cream was still detectable after heating at 71.1° C. for 30 seconds and an additional 15 seconds were required to destroy its infectivity. This protective effect was even more

* The time and temperature relationships which obtain in official pasteurization equipment are in excess of the temperatures 61.7° C. (143° F.) for 30 minutes and 71.1° C. (160° F.) for 15 seconds as used in these experiments. For ice cream, pasteurization usually refers to a minimum of 68.3° C. (155° F.) for 30 minutes; a tentative standard of 79.4° C. (175° F.) for 25 seconds has also been recommended.

marked in the case of the Y-SK strain: suspensions of this strain in cream resisted thermal inactivation at 71.1° C. for a period of 120 seconds. Inactivation of this strain occurred only after the holding time had been increased to 180 seconds, a difference of at least 173 seconds from the time required to destroy virus suspended in water.

The different results obtained using the stainless steel tubes and the glass capillaries deserve comment. By the former method, human fecal virus suspended in ice cream survived, even though it had required 60 seconds to reach 71.1° C. and had been held at that temperature for an additional 15 seconds. Virus suspended in ice cream was inactivated when heated in glass capillaries for only 15 seconds at 71.1° C., the lag time in this instance being 3.4 seconds. Thus, it appears that unless complete heat penetration is assured, virus particles may survive this treatment.

In conclusion, poliomyelitis virus which had been adapted in the laboratory to cotton rats was inactivated by the "standard" holding method of pasteurization, when suspended in milk, cream, or ice cream. However, virus suspended in cream was not inactivated by the high-temperature short-time method *devised in this laboratory*. Under the conditions of our experiments, poliomyelitis virus as present in human fecal material is inactivated by the holding and high-temperature short-time methods of pasteurization of milk, cream, and ice cream. Heat penetration must be assured for inactivation to take place.

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Problems in Maintaining Immunity to Smallpox*

ABRAM S. BENENSON, MC, USA, F.A.P.H.A., C. HENRY KEMPE, M.D., AND RALPH E. WHEELER, M.D., F.A.P.H.A.

Commanding Officer, Second Army Area Medical Laboratory, Ft. George G. Meade, Maryland; Assistant Professor in Pediatrics, University of California Medical School, San Francisco, Calif; and Professor of Preventive Medicine and Bacteriology, Tufts College Medical School, Boston, Mass.

THE introduction by Jenner of inoculation with cowpox virus has provided the means for eliminating the scourge of smallpox from the civilized world. Yet today, one hundred and fifty-three years later, smallpox still exists sporadically in all parts of the earth, and not infrequently appears in localized severe epidemics. This continued presence of smallpox is dependent on technical administrative problems and not on any immunologic defect in Jennerian prophylaxis.

Jenner's[1] assertion that "the Cow Pox protects the human constitution from infection of the Small Pox" is still accepted today, although few of us have the courage of Dr. Benjamin Waterhouse, who vaccinated his own family in 1800 with the first vaccinia virus imported into this country and then, to assure himself of its efficacy, moved three of his children and two of his servants into Dr. Aspinwall's smallpox hospital in Brookline, Mass. Only when they remained well after generous exposure to patients with smallpox and *after inoculation with variola virus*, did he distribute the cowpox for use throughout the country. It is interesting to note that the then President of the United States, Thomas Jefferson, succeeded in passing Waterhouse's strain of cowpox and introduced its use in Virginia, Maryland, and Pennsylvania. No cries were raised of the interference of politics in medicine, but it is a sad commentary that organized medicine of the day offered Waterhouse no assistance; indeed, most physicians of the day provided bitter and malignant opposition and vilification.[2, 3]

A review of the smallpox status of today can best start with the outbreak which occurred in 1950–1951 in Brighton, England.[4] In this city, in one of the most highly civilized countries on earth, 29 confirmed smallpox cases followed the return of an infected RAF officer from India. Eighteen of these patients had never been vaccinated, 7 of them died. Of the other 11 cases, 3 of whom died, only 2 had been revaccinated after infancy; 1, the source case, as recently as 2 years before contracting the disease. There is particular irony in the fact that 12 cases with 6 deaths occurred among the staff of the isolation hospital which admitted the early cases. Nine of these staff cases had never been vaccinated; furthermore, of the entire staff of 110 persons, one-quarter had

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never been vaccinated. What better illustration could be found of the current neglect of an effective preventive measure?

Those who have never been vaccinated constitute an administrative problem; our concern here is with the immunologic problems. The cases of smallpox occurring among vaccinated persons direct our attention to a consideration of the duration of the immunity conferred. Jenner thought that this immunity was lifelong; however, very early the concept arose that vaccination was effective for only 7 years. In the early days, immunity was tested by challenging with variola virus; this we no longer do—instead we assume that if the individual is susceptible to vaccinia, he is also susceptible to variola. By this criterion, certainly, immunity is transient; its duration varies from individual to individual and rarely persists for life. The literature abounds with instances of successful "takes" within short periods after vaccination. Indeed, an accepted test of the potency of vaccine lymph[5] is the ability of a vaccine to "take" in at least 50 per cent of persons who have been vaccinated 10 to 40 years previously. Published reports of the average duration of immunity in various groups yield contradictory evidence, reflecting variations in interpretation of the local cutaneous reactions or in the properties of the vaccine lymph.

A much better index of the duration of immunity lies in study of the vaccination histories of smallpox cases. Among British troops in North Africa,[6] and American forces in Korea[7] and Japan[8] during World War II, an appreciable number of smallpox cases with some fatalities occurred among men who had been vaccinated within the preceding 1 to 9 months and who had shown "immune," or vaccinoid, reactions. If these reports can be taken at their face value, they mean that successful vaccination is, in a moderate number of persons, inadequate to protect for a period of a few months against virulent variola. Are we justified in this assumption? We do not believe so, but let us explore the matter further.

These outbreaks, occurring in Egypt and in the Far East in thoroughly vaccinated groups, resulted in the assumption by some that the local epidemics of smallpox were due to a strain of variola virus against which the vaccinia strains used for inoculation offered inadequate immunity. The practical and convincing answer was the complete disappearance of the disease among troops after they had been inoculated with fresh vaccine of proved potency. This field answer substantiated the careful animal experimental work, employing monkeys, which showed that potent preparations of standard strains of vaccinia protected against different strains of variola.[9-11]

If the failures in Egypt and the Far East were not dependent on immunologic deficiencies in the vaccine, then what was responsible for these unnecessary deaths? We believe the answer is to be found in the essential nature of vaccination. Immunity does not result from the exact antigenic material injected but from the large amount of active virus which develops in the person as a result of its propagation in his body. The procedure of vaccination, therefore, is a deliberate attempt to create an infection with a living agent.

In the initially vaccinated individual, this infection, called "vaccinia," has a 3 day incubation period. It then progresses through the typical stages of papule, vesicle, and pustule. An "efflorescence"—an indurated area surrounded by erythema—develops around the lesion between the 8th and 14th days. This efflorescence was correlated by von Pirquet[12] with the appearance of immunity. In a previously unvaccinated person, if infection does not take place,

there is no reaction other than that from the trauma involved.

The initial infection with vaccinia or variola confers not only immunity but, as shown by von Pirquet, also a bacterial type of skin sensitivity, demonstrable as a reaction occurring within 48–72 hours after insertion of inactive viral material. This sensitization, as well as any immunity, alters the reactions which may develop on revaccination with potent lymph. Leake's classification of these, based on measuring the reactions at least 3 and 9 days later, is generally accepted.[5] The *early reaction* or *immediate reaction*, in which maximal skin involvement occurs between 8 and 72 hours after vaccination, is that shown by those with immunity so high that there appears to be little or no virus propagation, or else very rapid recall of immunity permits only abortive propagation. Because of this, the terms "immune reaction" and "reaction of immunity" are commonly used to designate what may be merely a sensitization phenomenon.

The *vaccinoid reaction* is that seen in those persons who retain only partial immunity. Instead of subsiding after 72 hours, the immediate reaction which occurs is followed by the appearance of maximal erythematous skin involvement on the 4th to 7th day. Virus propagation always occurs and is terminated by an accelerated recall of immunity. *Vaccinia* is seen in those who have completely lost effective immunity; the height of the erythematous blush takes place from the 8th to 14th day, and, except for the possible presence of the sensitization reaction within the first 3 days, the progression is identical with that seen on the first vaccination.

There is evidence that it is more difficult to establish infection in previously immunized persons, since a poor lymph can sometimes produce a high percentage of takes after primary vaccination yet may fail to elicit vaccinoid reactions in a group last immunized some years before. Successful vaccination must then depend on the technique used in inserting potent vaccine lymph. In this country, the multiple pressure method[5] is most generally used, while in England the scratch method has been preferred. Comparisons of the two methods show the superiority of the multiple pressure method.[13, 14] Bull and Rankin[15] called attention to the fact that, even with the multiple pressure method, successful results depend on good technique of the operator.

An evaluation of the importance of technique was carried out in a Tufts College Medical School class. After the students had been thoroughly drilled by assigned study, demonstration, and dry run application of the multiple pressure technique, they performed vaccinations on each other. Twenty-two per cent of these attempts resulted in "no takes." One month later, with improvement in their technique, the students repeated the vaccinations and this time "no takes" were observed in only 9 per cent. One week later, we personally revaccinated the class and there was only one "no take" among the hundred students; this occurred in a student who had reacted both times previously. In our experience, those who gave no reaction when inoculated with live vaccine on one or more occasions always ultimately reacted on repetition. For these reasons, lack of reaction after vaccination must always be considered to be technical failure and an absolute indication for revaccination.

This study pointed up another significant fact. Nine of the students showed no more than the immediate reaction on the first vaccination; yet on revaccination they developed vaccinoid reactions. In some of these, a very low level of immunity was suggested by maximal skin reactions occurring as late as the 7th day. This shows that the immediate reaction may be produced by in-

adequate insertion of potent lymph in persons with low-grade immunity. And this occurred despite the fact that the technique used by the students was exceptionally good and much closer to that described by Leake than can generally be found!

The best manipulative technique, however, can induce infection only if the vaccine used is adequately infective. The infectivity, or potency, of vaccine deteriorates with time. This occurs more rapidly the higher the temperature, particularly with fluid, glycerinated vaccine. It is interesting to note that Thomas Jefferson suggested that the virus be maintained as cool as possible in shipment[5]—now we extend his recommendation and advocate storage of vaccine at subfreezing temperatures at all times prior to use. The widespread availability of mechanical refrigerators, deep-freezes, and dry ice makes it possible to maintain these freezing temperatures under almost all conditions. Yet even in the military, ignorance or neglect can result in a situation where the outbreak of smallpox among troops in Korea only five years ago could be attributed to the use of deteriorated vaccine.[7] In spite of the stern inflexibility of the written order and the availability of superb equipment, this vaccine had not been properly refrigerated. The deterioration was not appreciated because the reactions it produced were misinterpreted.

The criteria used for interpretation of the result of vaccination too often vary with the operator; to some persons, any morphological response beyond that of trauma is considered to be evidence of a successful vaccination. Others rely on a single reading on the 8th or 9th day: if there is no visible lesion at this time, an immediate reaction is assumed; if the lesion is active, vaccinia is reported; while if there is a scab or subsiding lesion, a vaccinoid reaction is recorded. Some British workers,[13, 14] cognizant that the immediate reaction may represent only a sensitization response to inactive material, accept the development of a vesicle as proof of a successful or immunizing take.

The proved existence of a morphological difference between the sensitization reaction which may follow insertion of deteriorated vaccine and the immediate reaction, which follows application of potent lymph, would provide a valuable tool for evaluating early reactions. Unfortunately, comparison of simultaneous reactions to potent and heat-killed vaccine in a group of well immunized Army officers failed to show that such a distinction exists. Papules, vesicles, and areolas developed in essentially identical incidence regardless of the potency of the lymph; vesiculation was actually noted in 50 per cent of the reactions to inactivated vaccine, thoroughly refuting the concept that the presence of a vesicle assures effectiveness of the vaccination. The extent of sensitization reaction possible is exemplified by the case of one medical officer, who, at the site of inoculation of dead virus, developed a 1 cm. papule surrounded by an areola 3.5 cm. in diameter within 24 hours. In 48 hours, the papule had broken down into a large vesicle filled with cloudy fluid. This reaction was seen by other physicians, who diagnosed it as a vaccinoid reaction—an impossibility if the virus was dead. To settle this point, attempts were made to isolate virus from the lesion, with no success. By the 4th day the reaction was definitely subsiding; on the 8th day a scab was firmly attached which separated about the 14th day to leave a small pitted area.[16]

It is presumed that reactions such as seen in this particular officer were those recorded in the literature as vaccinoid reactions followed within short periods of time by smallpox. These findings confirm Leake's categorization of reactions—not by the morphological

appearance alone but by the time of the greatest skin involvement including erythema, based on *adequate* observation. It must be concluded that only if "the height of the erythematous blush" occurs *after* the 3rd day can one be certain, without detailed laboratory study, that active propagation of virus has occurred in the local area and that adequate immunity has been elicited.

The group of officers mentioned above had been repeatedly immunized and they were possibly hypersensitive. On the average it had been only 9 months since their last previous vaccination. Also it was possible that the simultaneous application of live and dead vaccine might have distorted the picture. Therefore, the question was again studied on a class at Tufts College Medical School. The average elapsed time since last previous vaccination of this group averaged over 6 years. One-half of the class was given only dead vaccine and adequate precautions were taken to eliminate possible contamination with the living agent used on their classmates. Later, as a control, the other half of the class was vaccinated with potent virus of the same lot, which had not been heat-killed. All of the group receiving dead vaccine developed immediate reactions; 29 per cent of these were vesiculated, 43 per cent presented areolas. The immediate reactions to potent vaccine were, on the whole, more severe than those to dead vaccine; 82 per cent were vesiculated and 78 per cent had areolas. This suggested that, in many, actual abortive virus propagation had occurred. However, it was not possible to establish which vaccine had been used from the appearance of the individual lesion. The intensification of the reactions to live vaccine seen in this group, as compared to the Army officer group, is believed to have resulted from a lower level of immunity.

Since these reactions to inactivated vaccine occur in previously immunized persons, it might be conceivable that the small amount of antigen inserted into the skin might boost the immunity. Sera taken before and 21 days after vaccination were carefully examined by the complement-fixation and hemagglutination-inhibition tests. No significant increase in antibodies occurred following the use of dead vaccine, whereas there was a definite increase in circulating antibodies in the majority of persons inoculated with live virus. The extent of this increase could not be correlated to the skin reaction observed; indeed, a 16-fold rise was observed in one student after a simple papular immediate reaction! [17]

In determining immunity, the result of actual challenge with infectious material is much more informative than deductions from *in vitro* tests. Accordingly, 1 month after the application of inactivated vaccine, the medical students from Tufts College were properly vaccinated with live virus, with the result that 43 per cent developed vaccinoid and 4 per cent vaccinal reactions. This was essentially identical to the earlier findings in the half of the class which had initially received live virus. It may well be mentioned that 2 students who had shown areolovesicular reactions to the earlier insertion of inactivated lymph developed vaccinal reactions following application of living virus. These studies illustrate once again that the so-called immune reaction by itself does not connote solid resistance to infection but may merely indicate previous sensitization to this foreign material. The immediate reaction implies immunity only if lymph of adequate potency has been properly applied.

In the early days of vaccination, smallpox was a common disease in the community. The immune state, once achieved, was maintained by repeated contact with variola virus. Such a state of affairs fortunately no longer persists. What nature once performed for us we

must now do artifically by revaccination. When revaccination is done sporadically, with poor technique, with improperly refrigerated vaccine, and with inadequate observation, we arrive at the situation existing today, when we must ask ourselves whether the next outbreak of smallpox may not be in our midst rather than in Brighton, England. The mass vaccination in New York City in 1947 would indicate that only about a quarter of our population can be expected to be solidly immune.[18]

In conclusion, I can do no better than read excerpts from what James Bryce[19] wrote four years after Jenner published his original report:

> Dr. Jenner has thus acted his part; it remains for the other members of society to act theirs; he has shown how important advantages may be obtained; it is theirs to carry this plan into execution by co-operating, both by example and by precept, to render general the practices of inoculation for cowpox: the reward being no less than exterminating one of the most loathesome and fatal disease to which mankind are liable—The smallpox. I must here, however, observe that it is not the prevention of smallpox in a country, for a few years or perhaps a century, that ought to be regarded sufficient. . . . If it should then unfortunately so happen that the advantages resulting from cowpox are forgotten, or undervalued . . . then the smallpox may again be imported from some remote corner where the influence of cowpox was unknown . . . and hold a course among mankind nearly as terrific as that described by authors who relate the ravages of this dreadful disease. . . . Measures might be contrived not only for rendering vaccine inoculation general, but also for continuing it with unremitting diligence throughout future ages.

How phenomenal a prophecy of the status today, when we have available the means of preventing this disease for which we have no cure and yet to which the majority of our population is apparently susceptible—a status which we tolerate in the face of all the knowledge and tools needed to eliminate it and which persists because so few of us appreciate the immutable power of this fatal or disfiguring infection.

We have lost the reservoir of contagion which once provided a periodic boost to immunity that might be fading in the years after primary vaccination. We must replace this with adequate periodic revaccinations, the value of which must not be compromised by the use of deteriorated vaccines, by poor, haphazard technique, and by improper interpretation and evaluation of the immediate reactions produced. When the current errors are generally corrected and when we appreciate the danger of our present status, we shall have solved the most important problems in maintaining immunity to smallpox.

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New York City Health Survey

The New York City Mayor's Committee on Management Survey, of which Dr. Luther Gulick is the executive director, released the report "Study of the Department of Health of the City of New York" on March 31. It was front page news in New York papers and received wide editorial comment. This is a 333 page report of the Survey conducted by a staff assembled by the American Public Health Association. The directing team consisted of Hugh R. Leavell, M.D., Dr.P.H., professor of public health practice at the Harvard University School of Public Health, Boston; Ira V. Hiscock, Sc.D., professor of public health at Yale University, New Haven, Conn., and chairman of the Committee on Administrative Practice, A.P.H.A.; Abel Wolman, Dr.Eng., professor of sanitary engineering at the Johns Hopkins University, Baltimore, Md.; and Roscoe P. Kandle, M.D., M.P.H., field director, American Public Health Association, New York. The directors of the team were assisted by 28 consultants recruited from several schools of public health, the U. S. Public Health Service, the N.O.P.H.N., and other agencies and they had the counsel of 25 additional public health experts.

By its terms of reference the study was primarily designed to look into the future of public health services as well as to evaluate the present, but the emphasis was on what services the city should have during the next 25 years. The study of health services was a part of a series of studies into many phases of New York City government conducted by the Mayor's Committee. The A.P.H.A. also conducted a short study of the medical care services in the City Department of Welfare.

A digest of the report will be carried in a subsequent issue of this *Journal*.

An Epidemiologic Approach to the Study of High Blood Pressure*†

E. GURNEY CLARK, M.D., DR.P.H., F.A.P.H.A., F.A.C.P., AND JOHN A. MORSELL, PH.D.

Professor of Epidemiology, School of Public Health of the Faculty of Medicine, and Research Associate, Bureau of Applied Social Research, Columbia University, New York, N. Y.

THE objectives of this paper are threefold: first, to illustrate the employment of epidemiologic methods in the study of high blood pressure; second, to emphasize and define the importance of teamwork in such epidemiologic studies; and third, to underline the central role of the official public health agency in obtaining answers to epidemiologic questions.

Modern concepts and practice have restored to the science of epidemiology a function which stems from the original sense of the word. Literally, its roots mean "on, upon, or to the people." It was through years of special application that its usage became restricted to epidemic and communicable disease. The development of the newer concepts and practices has enabled epidemiology to apply more extensively the scientific method to wider problems of medicine and public health.

These new developments, as in any scientific field, are rooted in the old. Lessons learned in the study of epidemic and communicable diseases are now employed in investigations of other conditions which affect aggregations of individuals, such as heart disease,[1] mental disorders,[2] nutritional deficiencies,[3] accidents,[4, 5] mottled enamel,[6] congenital defects.[7] This application depends on the premise that population morbidity always reflects the synthesis of reactions among disease agents (both animate and inanimate), man, and the total environment including its physical, economic, social, and biologic aspects.[8-10] A thorough understanding of human disease, defect, or disability requires knowledge of the specific circumstances in nature in which such disorders arise and are perpetuated, as well as of the circumstances and conditions in which they do *not* occur. The attainment of such a comprehensive objective requires that facts and observations assembled from many scientific pathways be integrated with those relating to the occurrence of disease according to age, race, sex, other individual characteristics, and details of local environment. Such combined data establish some of the most fundamental facts and characteristics of disease. Frost's often-quoted statement distinguishes between pure descriptive epidemiology based upon such facts and its natural extension — analytical epidemiology—as follows: "Epidemiology is more than the total of its established facts. It includes their arrangement into chains of inference which extend more or less beyond the bounds of direct observation."[11]

* Presented before the Epidemiology Section of the American Public Health Association at the Seventy-ninth Annual meeting in San Francisco, Calif., November 1, 1951.

† This study is being supported by funds provided by the Commonwealth of Massachusetts for the use of its Recess Commission on Hypertension.

Thus, epidemiology is not simply a descriptive science but a collective and constructive science in that facts gathered from numerous diverse sources are related to one another in order to construct explanatory hypotheses concerning the natural history of a disorder and its eventual prevention and control.

An epidemiologic approach to the study of a disorder would comprise the following phases or steps:

1. A collection and compilation of data on the character, extent, and significance of the problem. This would mean an attempt to describe its incidence, prevalence, trends, and its distribution according to age, race, sex, occupation, and the like.

2. A review of what is known about the natural history of the condition. Natural history in this usage conforms with the concept clearly presented by Perkins.[12] This concept views disease as a process not limited to pathogenesis but taking into account the forces of host, agent, and environment which influence its origin, development, and termination. Thus, this phase is devoted to a consideration of all such forces as these and an appraisal of their effect on the behavior of the disorder. This leads to—

3. A definition of gaps in our knowledge and the consequent development of new hypotheses upon which to base further investigations.

4. The testing of theories and hypotheses by controlled experiment—in the laboratory and the clinic as well as in the field—the latter being largely practical epidemiology well within the province of the health officer and his associates.

A series of such steps have engaged our attention over the past 2 years in the investigation of high blood pressure, with particular emphasis on so-called essential hypertension. In all of them we have tried to keep before us as our ultimate objective, to contribute to preventive medicine, i.e., to the promotion of health and the prevention of disease.

It is a matter of great interest and considerable significance that these studies were not instigated by a division of epidemiology or by a department of public health. They resulted from the interest of a body appointed by an enlightened state legislature (the General Court of the Commonwealth of Massachusetts), its Recess Commission on Hypertension.*

The stated purposes of the Commission are to foster studies in hypertension along lines of (1) the natural history of the disorder; (2) clinical investigation of the disorder fully developed in man, with an appraisal of the various forms of therapy now available to combat it; and (3) basic research work on the pathologic physiology in man and in the experimental animal.

The Commission supported and was responsible for the origin of a project which enlisted the coöperation of the Commission and its consultants, the Division of Epidemiology, School of Public Health of the Faculty of Medicine, Columbia University, and the Bureau of Applied Social Research, Columbia University. These collaborators, appreciating the comprehensive requirements of an epidemiologic approach, immediately set about to establish a working team drawn from many disciplines. This team has consisted of surgeons, sociologists, internists, psychiatrists, physiologists, pathologists, laboratory investigators, epidemiologists, public health officials, teachers of preventive medicine, industrial hygienists, and state legislators. Its members have worked together throughout, using both

* Created by Chapter 32, Resolves of 1949; revived and continued by Chapter 11, Resolves of 1950, and Resolves of 1951.

Members: Reginald H. Smithwick, M.D., Chairman; Senator William E. Nolen, Holyoke (until October 18, 1951); Senator Robert F. Campbell, Medford (from January 19, 1951); Representative Paul A. McCarthy, Somerville; Representative Joseph F. McEvoy, Jr., Somerville; Representative Harrison Chadwick, Winchester; Vance L. Alden, Secretary.

OUTLINE 1

Classification of Titles from the Literature on Blood Pressure * †

I. Nature and extent of blood pressure problems (age, race, sex, and other demographic and environmental variables).

II. Agent or agencies (factors) operating to raise or lower blood pressure (nutritional, chemical, endocrine, physical, mechanical, and other disease states).

III. Habits and characteristics of man associated with variations in blood pressure.

- A. Customs, traditions, patterns of life
- B. Heredity and constitution
- C. Psychobiologic characteristics
- D. Ethnic (including race and nationality), sex, and age factors
- E. Response of human organism—renal, heart, and blood vessels, neurological, ocular, clinical manifestations, pathologic and histologic aspects
- F. Treatment—surgical and medical

IV. Environment—physical, social, economic

V. Other—experimental, animal and human; miscellaneous; subject reviews, book and book reviews, case reports

* Cross-indexing unlimited
† Excludes details of subclassification

correspondence and conference in pursuit of the objective—a greater understanding of the causes of hypertension.

The first hurdle to present itself was the coverage of the extensive world literature on blood pressure, which could not be left to chance. Therefore, the preparation of a bibliographic file of available references on blood pressure was undertaken. This file * comprises 19,000 titles recorded on individual McBee "Keysort" cards and classified, as in Outline 1, according to categories which follow an orderly pattern based upon the epidemiologic concept of the interrelation of agent, human host, and environment in disease causation. Subclassification and cross-indexing also permit use of the file along the lines of other viewpoints.

This file is easily kept current and is the backbone of our approach to this subject, since it provides a simple and quick method for complete coverage of references relating to any topic or subtopic on blood pressure. Its usefulness has been demonstrated both in our own routine work and in the ease with which isolated articles and subjects have been located upon special request. Adaptation of the file for publication as an index bibliography is now in progress.

Equipped with a practical reference file of these dimensions, we were able to locate the great majority of the studies dealing directly and indirectly with the occurrence of hypertension in this country and elsewhere. The first step in our epidemiologic approach, i.e., "a collection of data on the character, extent, and significance of the problem," necessitated the review and abstract † of 1,600 articles relating to incidence, prevalence, trend and distribution, according to age, race, sex, geography, season, weather, climate, occupation,

* The bibliographic file is the work of Ernest Koller, Jacob Katz, and Mary Stycos of the staff of the Bureau of Applied Social Research, Columbia University, who, after intensive reading and special instruction on the subject, classified, subclassified, and indexed 19,000 titles. Consistency and reliability in the classification were promoted through the use of uniform standards and spot checking by members of the bibliography staff and its medical consultant.

† These articles were read and abstracted by Ernest Koller and Jacob Katz of the staff of the Bureau of Applied Social Research of Columbia University, and the abstracts were recorded on the bibliographic file cards. They are also to be published.

habits of life, heredity, etc. Morsell [13] reviewed these abstracts and selected for critical analysis those concerned with the *extent* of the hypertension problem. Four very significant points emerged from this review: (1) There are no consistent standards for blood pressure measurement; (2) there are no established criteria for defining hypertension; (3) none of the existing studies is based on a scientific sample of the population of the country or any subdivision of it; and (4) although the various studies leave no doubt that hypertension is a health problem of great magnitude which varies according to age, sex, and race, they do not answer the question as to the actual extent of this problem.

The second step, "review and appraisal of what is known about the natural history of hypertensive disease," required the highest degree of teamwork. It was accomplished by means of a three day symposium held in Boston, Mass., Feb. 1–3, 1951,[14] which brought together 36 experts with long experience in the study of many aspects of the blood pressure problem. The symposium program, in five sections, focused on essential hypertension (hypertensive disease) and adhered rather closely to the categories of the literature as classified in Outline 1. As shown in Outline 2, Section I defined terms, established criteria and introduced the concept of the natural history of hypertensive disease. Section II considered the elucidation of causes. Sections III and IV reviewed the parts played by specific agents, the environment and human characteristics in the initiation and perpetuation of this disorder. Thus, 22 formal papers provided a review of the state of current knowledge and also the points of reference for the discussions of the topics of each section.

These discussions furnished critical appraisal and indicated the gaps in our knowledge. Finally, Section V (Step three) was reserved for a consideration of these gaps and for research suggestions to fill them. To facilitate the work of Section V, a "Review Panel"—a subcommittee of the larger group—was assigned the task of noting the principal problems still requiring solution. This Panel met daily at the close of each section to outline the salient points introduced during the discussion and to formulate a plan of investigative action.

A few of the unanswered questions recorded by the Panel were:

What are the criteria for measuring blood pressure?

Who should take blood pressure readings and under what conditions?

What is normal pressure?

Is blood pressure level related to the severity of the hypertensive process?

Is essential hypertension a single disease or do its manifestations represent multiple disease states?

Is there a hypertensive personality?

What mechanism acts as the precipitating factor in transforming inherited predisposition into overt hypertension?

What part do pregnancy, injury, infection, occupation, patterns of living, work habits, and physical environment play in initiating or sustaining hypertension?

Is renal origin established?

What part is played by pressor substances in the genesis of hypertension?

These and many other questions reflect the outstanding gaps in knowledge about this disorder.

In suggesting where answers to such questions might best be sought, the Panel noted that effort is being made in the laboratory and in the clinic to answer questions susceptible to research in these quarters; that the problems of diagnostic criteria and blood pressure measurement are subject to more adequate study in institutions with appropriate facilities; and that data on the physical, social, and environmental factors in relation to blood pressure alterations over a long period of time are lacking and should be collected by means of appropriate epidemiologic field studies. Studies com-

OUTLINE 2

Titles of Reviews Presented in Symposium on Essential Hypertension

Introduction

1. An epidemiologic approach to the study of essential hypertension
2. The formation and development of the Recess Commission
3. Public health aspects of hypertension
4. The problem of hypertension: A critical review of the literature dealing with its extent

Section I

5. Definition of hypertensive disease (essential hypertension)
6. Criteria for assessing significant deviations from normal blood pressure in man
7. The natural course of essential hypertension in man
8. Discussion *

Section II

Causes of Essential Hypertension in Man

9. A—As elucidated by physiological investigations in humans
10. B—As elucidated by anatomic-pathologic investigation in humans
11. C—As elucidated by animal experimentation
12. The evidence that essential hypertension is not a single disease entity
13. Discussion *

Section III

14. The role of endogenous and exogenous biochemical substances in essential hypertension in man
15. The role of injury, infection, or pregnancy in initiating or increasing the severity of essential hypertension in man
16. The influence of physical and occupational environment on essential hypertension in man
17. The relation of socio-economic environment and patterns of living to essential hypertension in man
18. Psychogenic influence as initiating and sustaining factors in essential hypertension in man
19. The phenomenon of stress in relation to essential hypertension in man
20. Discussion *

Section IV

21. Hereditary and constitutional factors: specific Mendelian trait or nonspecific predisposition?
22. The phenomenon of hyperreactivity: definition and illustration
23. The significance of hyperreactivity in the natural history of essential hypertension in man
24. The effect of extensive sympathectomy upon blood pressure responses and levels
25. The role of the sympathetic nervous system in essential hypertension in man
26. Discussion *

Section V

27 An appraisal of the state of current knowledge as reflected in the material of Sections I-IV
28. Discussion *
29. A proposal for large-scale community research in the epidemiology of essential hypertension in man
30. Discussion *
31. The contribution of organized public health to the solution of the problems outlined by the symposium

* Copies of the formal papers were made available to the Review Panel, the Section chairmen, and the discussion leaders some days in advance of the symposium.

bining medical, personal, social, and economic data should be devised to furnish both new and supportive information concerning such outstanding blood pressure problems as:

1. A definition of hypertensive disease
2. The prevalence of elevated blood pressure, according to such categories as age, race, and sex
3. The natural history of hypertensive disease in man

4. The significance of blood pressure levels in relation to prognosis
5. The phenomenon of hyperreactivity and the prehypertensive period
6. The question of heredity and constitutional factors in relation to blood pressure
7. Blood pressure levels, in relation to pregnancy, injury, infection, occupation, work habits and mode of life
8. The role of at least major psychologic trauma

Following this report, the symposium participants sitting as a committee-of-the-whole (a function they will continue to fulfil) critically discussed a proposal for long-term community research in blood pressure.

The proposed study would "undertake to examine the degree of association between the levels of blood pressure, on the one hand, and a variety of personal and environmental factors commonly held to be etiologically significant, on the other." [15] The study base would be a large number of families—perhaps several thousand—selected by the application of appropriate methods of population sampling in a suitable community or communities and followed for a number of years. Information would be sought on possible hereditary patterns, on body build, height and weight, and on personality type, age, sex, racial and ethnic origin. Studies of the amount of strain and stress present in the individual's mode of life, both occupational and domestic, would also be attempted. The relationship between these test factors and variations in blood pressure over a period of years would comprise the essential contributions of this investigation.

There was complete agreement among the members of the symposium that an investigation of the type described is essential if definitive answers are to be found for certain fundamental questions regarding high blood pressure. It was agreed that collaborative team research among clinicians, laboratory workers, public health workers, and sociologists is necessary for its success. It was agreed, further, that such studies must be undertaken on a community basis, preferably in a number of communities, since no single locale can furnish complete answers.

The strategic position of the local health department and local physicians in the community establishes them as vital links in the chain of facilities in epidemiologic research. No longer can the work of the local health department be limited to administrative services. No longer can its work be limited to epidemic disease. It is high time to revise two misconceptions prevailing among health workers: [16] (1) that epidemiology is a highly specialized science concerned *primarily* with the control of acute epidemics, and (2) that sound epidemiologic explorations are possible only for highly trained specialists. Specialists in various fields are essential members of an epidemiologic team in which the most strategic positions for epidemiologic observation are occupied by the health officers and their coworkers. The significant role of health department personnel in finding solutions to mass disease problems was emphasized by Massachusetts' Health Commissioner in closing the hypertension symposium. If these workers will apply the same measure of energy to field investigations of noncommunicable disease as they have in the past to epidemics and to the now less important communicable diseases, progress in preventive medicine will be hastened.

SUMMARY

Epidemiology has followed the widening horizons of preventive medicine and has emerged from the narrow confines imposed upon it by centuries of restricted usage. As a diagnostic tool of preventive medicine and public health, its orderly procedures are applicable to any disorder which affects aggregations of individuals. Their application in the

study of high blood pressure is now being made. Data on the nature and extent of the problem have been collected, existing knowledge of its natural history has been reviewed and appraised, gaps in our knowledge have been defined, and plans are now under way for field studies designed to aid in filling the gaps.

A thorough understanding of the conditions under which hypertension does and *does not* develop requires the collection of data from many sources and the use of the talents of a team of specialists from various fields. Such a team of specialists has been brought together. The most strategic position on the team is that of the public health specialists, since their training and experience in the community are ideal for making observations, collecting information, and aiding in the interpretation of these data in terms of local conditions. The end results of such teamwork are products which no one member of the team alone could accomplish.

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Medical Research and Control in Air Pollution*

GORDON P. LARSON

Director, Air Pollution Control District, County of Los Angeles, Los Angeles, Calif.

THE effects of air contaminants on the public health are the subject of widespread interest today. Despite the fact that there has been no extensive clinical or laboratory research in this field, large segments of the population in industrial areas believe their health is being impaired. The Donora incident and repeated accounts of smog attacks in various parts of the United States have increased the public's interests and its fears. More than 50 per cent of the complainants about smog who record their views with officials in Los Angeles County express a firm belief in the hazards to health involved. The aroused public interest and the increase in the release of air contaminants in large industrial centers and densely populated areas have led in the past two years to the creation of several state commissions to study the problem. In numerous instances the public health officer is making the investigation.

In Los Angeles County, where pollution frequently accumulates for prolonged periods because of meteorological conditions, the individual's fear is increased whenever medical opinion attributes a patient's ills to the polluted air. Once this diagnosis has been given, the person receiving the information is convinced. Telephone calls and letters on this subject are a definite problem for the Air Pollution Control District. On days of heavy concentration of smog, what can one tell a mother who believes her children's health is being impaired? What is the answer for an elderly cardiac or respiratory patient who fears he or she will not survive a smog attack? Their pleas for help or some assurance cannot be taken lightly.

Is the answer to be found entirely in a program of research to determine effects? If we assume, as many do, that this research must be done before an alarmed public can be satisfied, we are asking people to wait many years until expensive and time-consuming studies can be completed. Most contaminants are present in the atmosphere at such low concentrations as to make measurements extremely difficult. Where submicron dusts or fumes are involved, more fundamental research is needed before controlled experiments can be undertaken. Considering the time needed to develop methods and the time needed to determine the chronic or long-range hazards of low concentrations of contaminants, one can hardly expect even preliminary answers for some years.

Many discussions on this subject have been held with competent people in Los Angeles County who definitely advocate medical research to answer the question for the public and to insure removal of proved harmful contaminants from the air. Some groups maintain that controls should not be instituted until the effects on health have been determined for each

* Presented before the Engineering and Industrial Hygiene Section of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., November 2, 1951.

TABLE 1

Liquids and Solids

Pollutant	Values in Milligrams Per Cubic Meter: Day of Good Visibility	Values in Milligrams Per Cubic Meter: Day of Reduced Visibility	R.P.I.*: Day of Good Visibility	R.P.I.*: Day of Reduced Visibility
Oily material collected on filter	0.022	0.068	17,200	53,300
Carbon	0.039	0.117	12,000	36,100
Sulfur Trioxide	0.0	0.065	0	30,200
Silicon	0.0025	0.006	793	1,895
Sodium	0.0071	0.0018	789	1,290
Aluminum	0.0025	0.006	536	1,287
Magnesium	0.0011	0.0075	441	1,000
Calcium	0.0025	0.0025	695	695
Iron	0.0025	0.006	221	531
Lead	0.0008	0.006	49	368
Barium	0.0001	0.00024	20	48
Titanium	Trace	0.00024	Trace	37
Chromium	Trace	0.00024	Trace	24
Manganese	Trace	0.00024	Trace	23
Copper	0.0001	0.00024	8	19
Nickel	Trace	0.00024	Trace	19
Boron	Trace	Trace	Trace	Trace
Lithium	Trace	Trace	Trace	Trace
Silver	Trace	Trace	Trace	Trace
Strontium	Trace	Trace	Trace	Trace

* Relative Pollution Index = $NP/10^4$ (NP is the number of particles per cubic meter). NP is determined by: $MG/M^3 = \frac{D^3NP \times Rn}{6 \times 10^9}$

NP is calculated on standard density ($R = \frac{\text{grams}}{\text{cc.}}$) and on an assumed diameter (in microns) which approximates the critical scattering diameter. 0.65 microns (1 micron = 10^{-4} cm.).

pollutant. A certain amount of wishful economic thinking is inherent in the latter proposal. The hope exists that the medical research would only reveal one or two pollutants as affecting public health and that they then could be eliminated at minor cost to industry. A similar oversimplification of the problem is the belief still held by many people in Los Angeles County that one or two pollutants, or one or two types of sources, are the sole cause of the smog problem. Reliance on this belief also enables many contributors to blame "the other fellow" for smog.

The present known results of smog—reduced visibility, eye and throat irritation, damage to crops, and nuisance problems—arise from the discharge of more than fifty different substances which are released to the air in the form of liquid or solid particulate matter, gases and vapors. Reactions occurring in the air such as the formation of sulfuric acid mist from sulfur dioxide and the oxidation of certain hydrocarbons which produce irritating compounds further complicate the mixture in the air. Studies of the health hazard must consider single pollutants and the additive effect or synergistic action of various combinations of contaminants.

In this connection, microchemical techniques have been developed for determining the concentrations on many items of interest in research. The following peak measurements have been obtained in the Los Angeles area (See also Table 1):

Gases and Vapors

Sulfur dioxide	1.0 p.p.m.
Carbon monoxide	20.0 p.p.m.
Oxides of nitrogen	0.38 p.p.m.
Ozone	0.32 p.p.m.
Total aldehydes	0.4 p.p.m.
Total oxidants	0.63 p.p.m.

Formaldehyde	0.25 p.p.m.
Hydrocarbons	1.2 p.p.m.
Cyanides	Negative
Organic acids	0.35
Acetylene	Negative
Acrolein	Negative

Various instruments have been developed for the collection of samples (see Figures 1, 2, and 3). The Beckman aerosol collector for measuring sulfuric acid mist, a large-volume particulate collector and a modified Sonkin impactor are extremely useful tools. Atmospheric pollutants existing in the air as gases and vapors may also be collected by passing air through a series of traps which are immersed in progressively colder freezing mixtures. The first four traps are immersed in a freezing solution at –80° C., followed by a trap immersed in liquid oxygen at –183° C. The traps can be preceded or followed by a mechanical filter if so desired. The greatest collection efficiency is obtained at a sampling rate of 0.1 c.f.m. As the air is drawn through, the gases and vapors are cooled to the point where they condense on the cold surfaces of the traps. Enlarging the condensation surface by a glass wool pack or glass beads will improve the efficiency.

It is not expected that this method can be applied for collection of liquid and solid particles. A dust camera, visibility meter, and continuous aerosol sampler developed by the Chaney Laboratories of Glendale, Calif., have also been used in the air-sampling program.

Fumigation of plants with various contaminants and the study of photochemical reactions are currently under way in a Plexiglas chamber. This sun laboratory will not only provide a means for determining threshold values for irritants but will stimulate the development of analytical methods for further studies of air pollutants.

If medical research were to determine exactly what contaminants should not go into the atmosphere, the control officials would have only two approaches for correcting the problem. The first

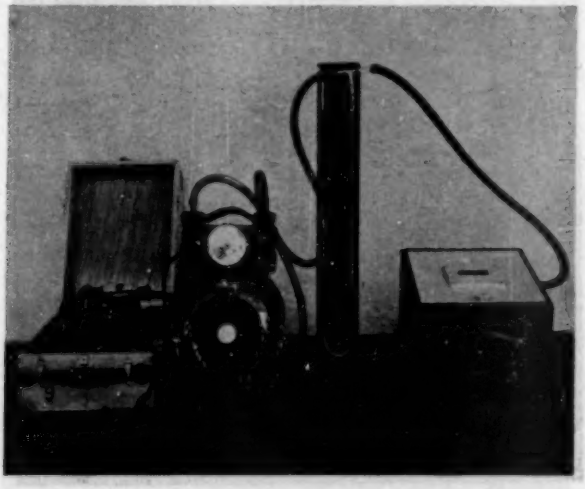

FIGURE 1—Thomas SO_2 Autometer

approach would be reduction of the contaminants at the source to an acceptable level through engineering techniques; the second, eliminating from an area those sources which contribute the forbidden pollutants. If the control must be applied to an even small number of categories, removal of the sources from the area or provisions against the establishment of certain industries are likely to be economically, and probably legally, impossible in an established industrial area until definite proof on the health factor is established. Prohibitions against certain sources entering a community could conceivably be applied only in the beginning stages of industrial growth. The control officer is therefore limited to applying engineering techniques to reduce the pollutants at the source. In this endeavor, he is further limited to the control techniques which are available. For the present, the application of the best available control techniques to smog sources is the maximum effort that anyone can make, regardless of the medical research findings.

What then are the chances for a control program to minimize the pollutants successfully? If the chances are good that controls applied on a broad basis throughout the community will reduce

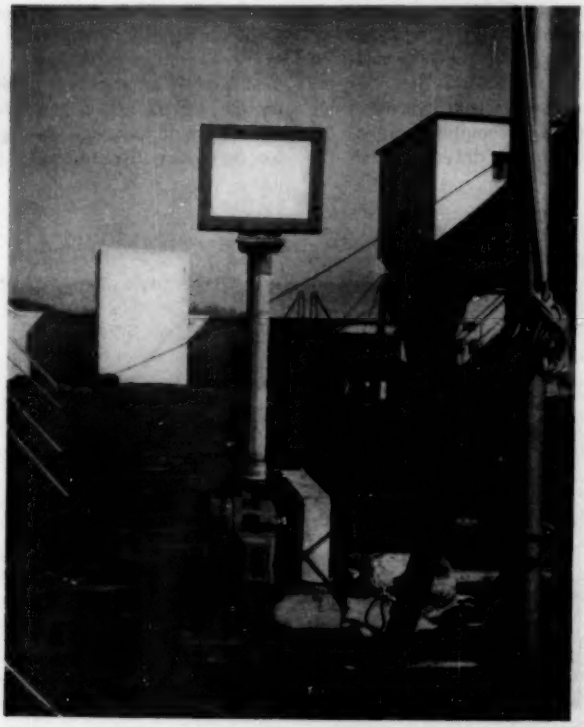

FIGURE 2—Large-Volume Particulate Collector

smog to its lowest possible level, then the public's worries can be allayed by such a program. The experience of the Los Angeles County Air Pollution Control District, while not held up as a model for other areas, may be indicative of what can be expected. A strong, flexible law is available under the California State Health and Safety Code to do the job. The funds have been provided for research to identify pollutants in the atmosphere and those going to the air from various sources in an effort to find the contaminants which produce the observed effects. An Enforcement and Inspection Division is available to seek out the sources and to carry out the enforcement phases of the law. The Engineering staff approves installations of control devices and of basic equipment which *might* pollute the air. An Air Pollution Control Hearing Board has been provided to weigh the equities between the public's right to breathe clean air and the property rights of industry or individuals. This program is planned to take care of the local problem. Research studies are confined to pinpointing pollutants which account for damage to crops, reduce visibility, cause eye irritation, or create local odor or nuisance conditions.

FIGURE 3—Aerosol Collector for SO_2 Determination

Three and a half years of intensive work have resulted in the expenditure by industry of approximately seven and a half million dollars to control pollutants at the source. As potential sources of pollution, industry in Los Angeles County has been divided into 28 categories. In all of these, it can be stated at this time that common visible sources which pollute our air can be effectively controlled. For example, within the metals industry, which in the Los Angeles area includes open-hearth furnaces, electrical furnaces, gray iron cupolas, lead smelters, and other nonferrous activities, metallurgical fumes are being collected with efficiencies ranging from 85 to 99 per cent. The dust producers, which include processes such as grinding and milling, have a relatively simple problem to correct. They are attaining collection efficiencies well above 95 per cent.

The requirements for the collection of dusts and fumes were specified after a detailed study of contributing sources. The economic factors and the availability of engineering techniques to meet the standards were considered before the limits were prescribed. The resultant allowable discharge is based upon the weight of material going into the process. For example, a company processing a thousand pounds of material per hour which results in dust or fume emissions cannot discharge more than 2.8 pounds of such emissions in any hour. This type of regulation is being used only in the Los Angeles area at present and is considered necessary to correct the local problem. Its application to other localities should be considered only after appropriate studies have been made in the area concerned.

The chemical plants producing sulfuric acid have reached the established limit set at 0.2 per cent by volume for sulfur dioxide, which for the present appears to eliminate local crop damage from sulfur dioxide under adverse weather conditions. Sulfur dioxide, produced in the burning of sour gases at refineries, has been reduced by more than 300 tons a day, and the result is the production of valuable sulfur. The burning of fuel oil produces in excess of 250 tons per day of sulfur dioxide, a problem for which no solution exists at present. Continued industrial expansion will increase the tonnage from oil burning. This pollutant must be continually studied to determine whether or not further reduction should be or can be made.

Odor problems, inherent in the operation of rendering plants, fertilizer processors, paint manufacturing and canning industries, have been successfully combated in every instance. Frequently, the improved operations eliminating the odors result in better products or in tangible savings. Oil mists from asphalt plants and strong refinery odors are also being eliminated.

Smoke particles floating in the stagnant air of the Los Angeles basin are most certainly a subject for concern. Seven thousand tons of waste material must be disposed of daily by fire. It is estimated that each day commercial and industrial plants burn 1,000 tons, domestic incinerations, 4,000 tons, municipal incinerators 500 tons, and woodworking plants 1,500 tons. To this activity may be added the consumption of 127,000 barrels per day of petroleum products in transportation and in boiler plants. If all this combustion were to take place with inadequate equipment, several hundred tons of smoke particles would be produced. The prevention of this smoke requires a continuous enforcement program, investigation of operating techniques to improve combustion, and the modernization of antiquated or poorly designed incinerators. It has been the experience in Los Angeles County that industrial smoke can be corrected from these sources. It can be safely stated that this industrial problem has been

reduced by at least 60 per cent. No such rapid progress has been made, however, on public rubbish burning in the county, where from 800,000 to a 1,000,000 back yard incinerators and open fires are potential smokers each day. The solution here involves the establishment of properly designed incinerators or land fill dumps, after which municipally supervised collection can be initiated.

Competent engineering studies on this subject have been completed and the means are at hand for the 46 communities in Los Angeles County to solve their rubbish problem, either as individual cities or by a coöperative plan which links several cities into contiguous rubbish disposal centers.

In addition to the smoke and fly ash found in these combustion gases, it has been determined that these same sources produce 250 tons each day of oxides of nitrogen. While this gas by itself may not be a serious contaminant, its presence in the atmosphere aids the oxidation of unsaturated hydrocarbons which are also present. This oxidation reaction involving unsaturated hydrocarbons, the oxides of nitrogen, and possibly other oxidizing agents produces a complex mixture of organic peroxides, aldehydes, and acids. When this reaction is carried on with extremely low concentrations of the reactants, in the presence of sunlight, certain growing crops exposed to these combined gases show the identical effects which are found in gardens after a smog attack. No other pollutants found in the air have produced this typical smog damage. It therefore appears that with the meterological conditions found in the Los Angeles area, certain hydrocarbons have passed the tolerance level. The next step, of course, is to determine the quantities emitted from the various sources through appropriate tests and studies, as was done in the case of dust, fumes, and smoke. This work is currently under way.

Where successful control has been accomplished with smoke, dust, fumes, and odors, the hope is increased that similar results can be achieved on other pollutants as they are discovered. Claims that this program is unwarranted because of its cost or that the effort to correct the problem is based upon hit-or-miss tactics are not justified. Each source has been studied to determine its contribution to the problem, and controls have been applied, based on the best engineering knowledge at hand. The efforts made in Los Angeles County are paying dividends. The number of days of intense smog is decreasing. Air samples show a decrease in the concentrations of metallic fumes, smoke, other particulates, sulfur dioxide, and sulfur trioxide. The average visibility conditions are improving. Of greater importance is the public's recognition of a noticeable improvement in the situation.

Since the study of sources and contaminants in the atmosphere indicate that neither the health problem nor the general smog problem may be resolved by elimination of one or two contaminants, there is an implication, at least, that some of the less common or more chemically complex waste gases going into the air in many densely populated and industrialized areas have received too little attention and may ultimately require some measure of control. The degree of contamination may be indicated in other areas by any of the symptoms found in Los Angeles, that is, reduced visibility, eye irritation, crop damage, local nuisance problems, and the general complaints of the public. These signs of growing pollution should give rise to timely action before conditions become aggravated. The scope of control and the amount of collection to be applied must be predicated on local studies of the effects, the condition of the atmosphere, and the contributors. Thus a control program based on applying the best knowledge of today offers

the only sound solution to the public's alarm about smog.

These observations do not mean that medical research should be ignored or abandoned. Health authorities agree that more should be known in this field. It would be difficult for one community to shoulder the entire burden of costs and certainly the interest is so widespread that a comprehensive study should receive support from many sources. Perhaps valuable information from medical research could be developed best by a number of separate research studies beginning in the fields where source and air sampling data are available. In this connection, it is of interest to note that federal funds have recently been allotted to a Los Angeles university for studies on lung cancer in the environmental field. Similar grants, such as this, might be sought by many interested researchers across the nation.

Whether the work is to be done piecemeal or in one vast long-range project, there are growing indications that medical research will be undertaken. In the meantime, control programs which are adequately supported to permit studies of each locality and dedicated to measures for the solution of local problems will provide invaluable information and techniques needed by medical researchers.

Three Way Rehabilitation Program

A milestone in the history of physical medicine and rehabilitation is reportedly represented by an agreement of three institutions in New York City to undertake a comprehensive program of teaching research and medical care in this field. The three institutions are the Institute for the Crippled and Disabled, Columbia University, and Presbyterian Hospital. In each of the latter two, a Department of Physical Medicine and Rehabilitation was established at the beginning of 1952, headed in each case by Robert C. Darling, M.D., who is also the chairman of the Medical Board of the Institute for the Crippled and Disabled.

The announced objectives of the affiliated program are:

1. To strengthen the hospital and Institute programs in the rehabilitation and reëducation of the disabled and handicapped.
2. To study and improve methods of rehabilitation and reëducation.
3. To provide a joint research and teaching program.
4. To provide jointly, "in proper continuity," all the professional services required by a handicapped person—including medical, psychosocial, vocational, industrial, and recreational.
5. To provide for the reciprocal interchange and utilization of the institutions' facilities.

Emphasized particularly will be research aimed at the development of new and improved prosthetic devices.

American Public Health Administration Meets the Problems of the Orient in Japan*

BRIGADIER GENERAL CRAWFORD F. SAMS, MC, USA, F.A.P.H.A.†

Chief, Public Health and Welfare Section General Headquarters, Supreme Commander for the Allied Powers

IT is difficult to state that any single form of administrative organization is typical of American public health administration, since almost any combination of functions may be found in the administrative organizations concerned with health and welfare programs. In some areas health administration is separate and in its narrow definition is limited to disease prevention measures. In other areas medical care and disease prevention are combined in health administrative organizations. In still other areas, welfare agencies are concerned with the administration of certain medical care and disease prevention programs.

Since there was only a very primitive health and welfare organization in Japan before termination of the war in 1945, it was possible to establish there what we believed to be the most efficient organization for the administration of health and welfare. The decision was made to incorporate into a single organization the four fundamentals of health and welfare. They are disease prevention, medical care, welfare, and social security. For purposes of brevity, this paper will be limited to a discussion of the organization established and a brief summary of the preventive medicine aspects of the program.

ORGANIZATION

In establishing any governmental health or welfare organization it is obvious that it necessarily will have to conform to the general organization of the government of the nation, which in turn should be adapted to the social structure of that nation. The Japanese Government was reorganized in accordance with a new constitution adopted after termination of the war. This constitution in Article 25 charges the government with the responsibilities of promoting the health, welfare, and security of the people. Unlike the United States Government, which is a federal government, the Japanese Government is national in form. In this form of government, residual legislative power under the constitution rests in the Diet, which is the national legislative body. There are no state constitutions and under the local autonomy law, state or local assemblies may pass legislation only as authorized by the national Diet. Under such a form of government all health and welfare legislation in Japan is national. In the United States our public health and welfare legislation is largely state or local and is based on the police power of the states. Such federal legislation as we have pertaining to health and welfare has been based on

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† Assistant Commandant, Medical Field Service School, Fort Sam Houston, Tex.

the powers of the federal government in controlling interstate commerce, since we have no provision in the United States Constitution for the federal government to concern itself directly with the health of the people.

Ministry of Health and Welfare—In any government in which executive, legislative, and judiciary powers are separate as they now are in Japan, some executive agency of the national government must be charged with the execution of laws passed by the national legislative body. Therefore, the Ministry of Health and Welfare, as one of the cabinet ministries of the executive arm of the government, is charged with the administration of all laws pertaining to health and welfare. At the beginning of the occupation, the Ministry of Health and Welfare included the function of labor, which dominated that ministry. Under the democratic concept that no single group within a body politic should be permitted to dominate such fundamental programs as those of health and welfare, which affect all the people of the nation, labor activities were separated from the Ministry of Health and Welfare and placed in a new Ministry of Labor. The Ministry of Health and Welfare was then reorganized to integrate the four fundamentals of health and welfare. They are all coequal. Each function is headed by professionally qualified personnel from the national to the local levels (see Chart 1).

Prefecture (State) Departments—Prior to 1945 such health and welfare activities as existed on the prefecture (state) level and local levels were under the Police Department, which operated under the National Ministry of Home Affairs. It therefore became necessary to establish health departments and welfare departments in each prefecture (state) government on a coequal status

CHART 1

with other major departments of the prefecture governments. These 46 state health departments and welfare departments are the first step in decentralization in the nation-wide pyramid of governmental health and welfare administration. Within the prefecture health departments the essential functions concerning preventive medicine and medical care are integrated. Within the prefecture welfare departments activities concerning welfare and social security are integrated. The perfecture departments are charged with the administration of national health and welfare laws within their respective prefectures (see Chart 2).

Health Center Districts—In order to complete the nation-wide administrative organization, health center districts have been established within the prefectures, one district for approximately each 100,000 population. The district is based on population flow or trade areas rather than on political subdivisions, such as city, town, or village units. This principle of district organization, of course, is one which has been found necessary even in the United States, since small communities are unable financially to support adequate health or welfare organizations at the local level. These health center districts coincide geographically with the medical service districts established under the Medical Service laws. They also coincide with the welfare districts and the social security administration districts, since the geographical areas based on population flow and trade are the logical units for the administration of programs in each of these four fields (see Chart 3). In the health center districts, the district health officer, under the supervision of the prefecture health department, administers the health laws and programs on the local level. Each health center district contains at least one completely organized and staffed health center and as many branches as may be required.

The district health officer is also charged with administration of the laws and programs pertaining to medical care, such as the inspection and licensing of hospitals, compliance with the Pharmaceutical Affairs law, which is similar to our Food and Drug Administration law, and other medical care laws. He is concerned with close liaison with the local medical, dental, and other professional associations, and both private and governmental hospitals and sanatoriums. Chart 3 lists the functions of the health center and medical service districts. These functions are all based upon national laws. To summarize, it might be stated that the health center district, medical service district, welfare district, and social security district comprise an intermediate echelon of government between the state level and the city, town, and village level. The city, town, and village health and medical care activities come under the supervision of the district health officer.

There is an exception to this principle which exists in the case of the large metropolitan areas. In cities of over 300,000 population, city health departments and welfare departments have been established under the technical supervision of the prefecture health departments and welfare departments for the purpose of coördinating within the metropolitan areas the activities of the health center districts, the medical service districts, the welfare districts, and the social security districts. It was found desirable to establish such an organization within metropolitan areas which included more than two health center districts to insure better liaison and cooperation with other metropolitan governmental functions, such as police and education.

Health Centers—Prior to the occupation of Japan there were health centers which were primarily advice and gui-

dance clinics. Some were limited to examinations for tuberculosis; others were maternal and child hygiene clinics. They had no authority, nor were they organized to provide the basic services considered essential in any modern health center organization. Because of their inadequacy they had fallen into disrepute. It was therefore necessary to establish a nation-wide health center organization with a goal of 800 health centers. There are now three types of health centers in Japan. At the termination of the occupation, progress toward

CHART 2

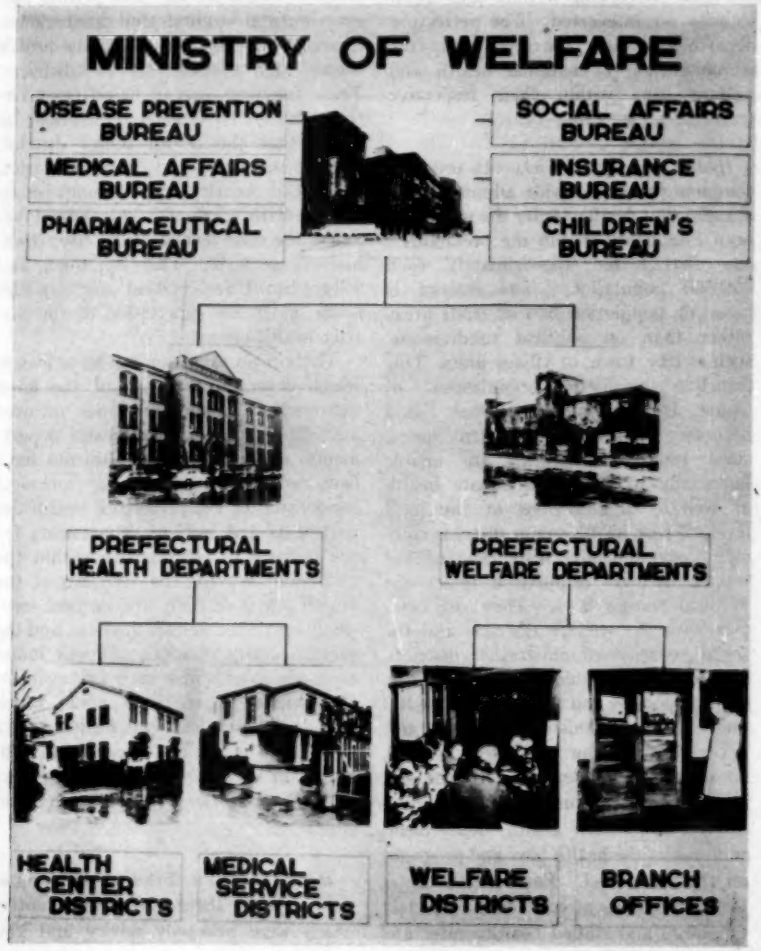

CHART 3

Health Center Districts

Communicable Disease Control
Venereal Disease Control
Tuberculosis Control
Public Health Statistics
Environmental and Food Sanitation
Public Health Education
Public Health Nursing
Maternal and Child Hygiene
Public Health Laboratory
Dental Hygiene
Nutritional Services
Medical Social Services

Medical Service Districts

Hospitals
Medical Offices
Clinics
Dental Clinics
Dental Offices
Nursing Homes
Maternal Hospitals
Supervision of Clinics
Local Medical Associations
Local Dental Associations

the goal has been made as follows:

180 C'ass A Health Centers	61 staff
60 Class B Health Centers	54 staff
484 Class C Health Centers	35 staff
Total: 724 Health Centers	31,526 staff

A Class A Health Center is found primarily in the urban areas and provides complete services as defined in the body of laws for health which has been established in Japan. Chart 4 indicates the basic functions and the various divisions and the types of professional and auxiliary personnel required to staff such an organization. It is to be noted that there are 8 doctors, 1 dentist, 15 public health nurses, 1 midwife, 1 health veterinarian, 5 sanitarians, 3 pharmacists, and 1 nutritionist among the professional personnel.

The Class B Health Center differs only in the number of public health nurses and in the nonprofessional personnel. The Class C Health Center omits the dentist and veterinarian and has a smaller number of physicians, there being only 5; and a smaller number of public health nurses. The construction or reconstruction of buildings; the provisions of equipment for these health centers; and, more important, the organization and training of the 31,500 people required to staff these health centers alone have been a considerable undertaking.

Training—Since there were no schools of public health in Japan, it was essential to establish such schools if properly qualified personnel were to be made available for carrying out the program. The Institute of Public Health was established as a teaching institution in which the initial courses were developed and taught by my staff until Japanese professors were capable of carrying on. The Institute of Public Health is a governmental institution directly under the supervision of the Ministry of Health and Welfare. Since it was established

CHART 4

Organization and Personnel of Health Centers in Japan

Organization		Personnel											
Sections	*Divisions*	Physicians *	Dentists	Dental Hygienists	Public Health Nurses	Midwives	Veterinarians	Sanitarians	Pharmacists	Nutritionists	X-ray Technicians	Nonprofessional Employees	Total
General Affairs	Administrative Affairs	1										5	6
	Medical Affairs											2	2
	Pharmaceutical Affairs								1			1	2
	Environmental Sanitation							3					3
Sanitation	Sanitary Teams							8				40	48
	Food and Animal Disease Control						1	2	1			1	5
Health Promotion and Prevention	Communicable Disease Control	1										3	4
	Tuberculosis Control	2									1	1	4
	Venereal Disease Control	1										1	2
	Prevention											1	1
	Maternity and Child Hygiene	1				1							2
	Dental Hygiene		1	2									3
	Nutrition									1		1	2
	Health Education											1	1
Public Health Services	Public Health Statistics	1										3	4
	Public Health Nursing				15								15
	Medical Social Service											1	1
	Laboratories	1							1			2	4
	Total	8	1	2	15	1	1	13	3	1	1	63	109

* Director (Physician)

as a teaching institution in 1946, 3,468 key personnel have been trained in the courses at the Institute of Public Health. The model health center training courses supplement this program. In each of the 46 prefectures a model health center is located which is primarily a training institution for health center personnel within the prefecture who have been unable to complete the courses at the National Institute of Public Health. A school of hospital administration was established in 1948 for training directors of the 3,700 hospitals in Japan. It is hoped that in the future various universities will establish schools of public health and will eventually take on the burden of providing properly trained personnel for this nation-wide organization.

School Health Program—It was not until 1950 that we felt the health and welfare organization had been sufficiently developed to provide adequate service throughout the nation for the School Health Program. At that time the necessary legislation was passed at the national level bringing the health centers and boards of education, which had been newly established in Japan under the Civil Information and Education Section of General Headquarters, into a close coöperative relationship in the execution of the School Health Program. The Ministry of Health and Welfare and the Ministry of Education have issued coördinated instructions to the prefecture governors and boards of education, respectively, integrating the school health activities into the health center districts; thereby, we believe, following a sound principle of bringing under the administration of the health department all health activities within a given area, eliminating duplication and occasional conflict.

National Institute of Health—The National Institute of Health has been established as an agency under the Ministry of Health and Welfare to carry out three functions: research; biologic assay under the pharmaceutical laws re-

quiring minimum standards for biologic production; and the training of personnel in conjunction with the Institute of Public Health for staffing the prefecture and health center laboratories. The staff of the National Institute of Health, through proper channels, exercises technical supervision over the quality of work done by the laboratories concerned, and prepares various standard methods for use in these laboratories.

National Hygienic Laboratory—Another institution directly under the control of the Ministry of Health and Welfare is charged with the establishment of minimum standards and the assay of all drugs, medical devices, and cosmetics produced in Japan. Under the new Pharmaceutical Affairs law requiring such standards, samples of all such products manufactured in Japan have been assayed and the further manufacture of items which did not meet the new standards prohibited.

Health and Vital Statistics—Prior to the termination of the war, morbidity and vital statistics were funneled through the Ministry of Justice and police channels to the Cabinet Bureau of Statistics. They were put in the archives. Under such a system they were, of course, of no value to health and welfare officials charged with planning health and welfare programs. Major reorganization of this morbidity and vital statistics program was therefore undertaken. At the present time the morbidity and vital statistics are handled through the nation-wide health and welfare organization. The first place of consolidation is the district health office in order that the district health officer may have complete and up-to-date information on conditions within his district. The prefecture health departments then consolidate these statistics by health center districts and they are passed on to the Health and Welfare Ministry. The consolidated statistics at the prefecture and national levels are redistributed to all the echelons of the health administration.

PREVENTIVE MEDICINE ASPECTS

Since this paper is primarily devoted to discussion of the public health administration, it is possible only to mention a few of the results obtained through the nation-wide health and welfare organization established in order that its efficiency and soundness may be evaluated.

Tuberculosis—In Japan, tuberculosis has been the Number One killer since 1932. Between 1932 and 1945 the annual tuberculosis death rate increased steadily and reached a peak of 280 per 100,000 population in 1945.

A control program was inaugurated which included the utilization of BCG. Under the new tuberculosis control law all persons under the age of 30 are tuberculin-tested annually. Those who are found to be negative are immunized with BCG if they are over 6 months of age. If they have lost their immunity on retesting, they are reimmunized. Those who are tuberculin-positive are chest x-rayed and if the findings are indicative of active lesions, sedimentation, sputum, and other follow-up measures are undertaken. For the year 1950, 528,324 active cases were uncovered through this program in the examination of 8,779,649 persons found positive to tuberculin. Active cases which are suitable for streptomycin and para-aminosalicylic acid therapy are placed under such treatment. Tuberculosis bed capacity, which was less than 25,000 beds in 1945, has been increased to 101,000. For the first time since the beginning of the occupation the effect of this treatment program is becoming manifest in that the death rate in the nonimmunized group is now beginning to drop for the first time. Prior to 1950 all reduction in tuberculosis death rates

since the termination of the war occurred in the BCG-immunized age groups. The death rate from tuberculosis has been reduced to 145.4 per 100,000 in 1950 and 108 in 1951 from the peak of 280 per 100,000 in 1945.

Enteric Diseases—Enteric diseases, which were the second leading cause of death in Japan, were attacked through the use of immunizations for typhoid and paratyphoid fevers and through improvement in environmental sanitation for the dysenteries. The mean annual morbidity rate for typhoid fever for the 7 year pre-occupation period was 63.9 per 100,000 population and has been reduced to 7.8 per 100,000 population in 1950. Under the immunization law requiring typhoid-paratyphoid immunization and annual reimmunization of all persons under 60 years of age, approximately 50,000,000 inoculations or reinoculations were performed in 1950 alone.

Through the use of sanitary teams attached to health center districts the morbidity rate for dysenteries was reduced from a mean annual rate of 101.6 per 100,000 population for the period 1938–1945, to 18.3 in 1948. This reduction was accomplished by the services of approximately 360,000 men organized into sanitary teams.

An interesting controversial question seems to have been answered in the past three years. The drop in dysentery and typhoid-paratyphoid rates had paralleled each other during the years 1945–1948 inclusive. The question of the efficacy of typhoid-paratyphoid vaccine in the reduction of typhoid and paratyphoid fevers versus the influence of environmental sanitation has been a controversy of long standing. Due to budgetary cuts and the curtailment of sanitary teams in 1949 and 1950 there has been a corresponding rise in dysentery rates for 1949 and 1950 resulting from this relaxation in the environmental sanitation program. However, during this period the typhoid-paratyphoid rates have continued to drop. It would therefore appear that the evidence is conclusive that typhoid-paratyphoid immunizations are effective and have been the primary factor in reducing the incidence of these diseases in the face of a retrogression in environmental sanitary standards.

Smallpox—As an example of control measures for other preventable diseases, the entire population of 83 million people was reimmunized against smallpox late in 1949 and early in 1950 following the introduction of smallpox from Korea. In the year 1950 there were only 5 cases of smallpox, all of which were either in smugglers or returnees from Korea.

Death Rate—Perhaps one of the most important criteria in evaluating the results of the health and welfare program can be summarized as follows: The mean annual death rate of 18.7 per 1,000 population for the 7 year pre-occupation period, which reached a peak of 29.4 in 1945, was reduced to 10.8 in 1950, and the first 6 months in 1951 indicated that it will be close to 10 for the year 1951.

An analysis of the causes of death shows that most of this reduction in the crude death rate has occurred in those diseases to which emphasis has been given in the control programs.

Increase in Life Expectancy—It is interesting to note as another evaluating factor that between the years 1895–1947, life expectancy in Japan during these 52 years was only increased from 42.8 to 50 years for men. The life expectancy for women was only increased from 44.3 to 53.9. During the 3 year period 1947–1950, the life expectancy for men increased from 50.0 to 58.0 and for women from 53.9 to 61.5.

CONCLUSION

The reduction in death rate and the increases in life expectancy are attributed to the application on a nation-wide scale of modern methods in the prevention of disease and in medical care through a modern nation-wide public health and welfare administrative organization. I know of nothing more important in demonstrating to the people of Japan and other nations of the world —particularly those in the Far East— what we mean by the worth of the individual, which we consider to be the essence of democracy, than the literal gift of life which the occupation has brought to some 3,000,000 Japanese who would have died between 1945 and 1951 had these modern programs not been established and had the prewar death rate continued at its normal level.

It is obviously impossible to discuss in this short paper the many ramifications of a nation-wide program involving all aspects of disease prevention, medical care, welfare, and social security. For further information the reader is referred to published reports entitled *Health and Welfare in Japan* which are listed in the bibliography.

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Catalog Cards for Films

The Library of Congress has inaugurated a new service of catalog cards for motion pictures and film strips. The Library and the Office of Education have agreed to the comprehensive coverage of government films by this means.

The entries, on 3 x 5, 100 per cent rag paper cards, are prepared by the Visual Aids Service of the Office of Education. They will include the name of the picture, producer, date of release, running time, size of films, notations as to sound and color, credits, a summary of the contents, subject covered, grade level, and other information essential to a complete catalog description.

Further information and prices from Card Division, Library of Congress, Washington, D. C.

The Use and Abuse of Prepaid Comprehensive Physicians' Services*†

S. J. AXELROD, M.D., M.P.H., F.A.P.H.A., AND ROBERT E. PATTON, M.P.H.

Associate Professor, School of Public Health, University of Michigan, Ann Arbor, Mich., and Biostatistician, New York State Department of Health, Albany, N. Y.

THE provision of comprehensive physicians' services, that is, general practitioner and specialist care in the home, office, and hospital through medical care insurance, is a subject of increasing public and professional interest. For the most part, plans providing comprehensive physicians' services are sponsored by consumer coöperative associations, such as the Group Health Cooperative of Puget Sound; by community-wide nonprofit organizations such as the Health Insurance Plan of Greater New York; and by employee mutual benefit associations or labor unions, such as the Labor Health Institute of St. Louis. Typically these plans use group practice organizations to provide physicians' services.

On the other hand, relatively few of the 77 Blue Shield plans, based on the individual practice of medicine, provide similarly comprehensive physicians' services. Many Blue Shield plans, however, are cautiously approaching this type of benefit structure by providing surgical care in the physician's office and the patient's home for specified procedures or up to specified cash payments. The restricted benefit structure of the Blue Shield plans has, in general, been attributed, first, to the lack of actuarial data on which to base premiums, and second, to the unfavorable early experience of several plans which offered comprehensive physicians' services. In these comprehensive plans, since discontinued, the excessive demand for physicians' services is generally regarded as abuse of service by the subscriber.

Utilization data from comprehensive physicians' service plans are available, but this information is largely from plans based on group practice, where the participating physicians are paid on other than a fee-for-service basis. While there are compelling advantages in group practice both to the physician and the patient, the fact remains that only about 3 per cent of physicians in the United States are engaged in group practice. In our opinion it is unlikely that a large proportion of the physicians in this country will in the near future either be engaged in this form of practice or be participating in prepaid medical care plans where payment is *not* on a fee-for-service basis.

It therefore seems worthwhile to analyze, with reference to the use and abuse of physicians' services, the experience of a prepaid comprehensive physicians' services plan in which the participating physicians are in individual practice and are paid by the fee-for-service method. Such a plan, Windsor Medical Services, of Windsor, Ontario, Canada, a voluntary, nonprofit prepaid medical care plan sponsored by the Essex County Medical Society, was chosen for study. The objectives of this study

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were, first, to obtain utilization data on the receipt of comprehensive physicians' services, and second, to evaluate the extent of abuse of service by the subscribers.

Windsor Medical Services has been in operation since 1939, enrolling subscribers in Essex and Kent Counties. Single individuals and family heads are enrolled in groups of 10 or more having a common employer, or as 75 per cent or more of the workers in larger employed groups. Dependents, including children under the age of 21 and adult relatives under 60 years of age, are covered. The plan has shown a progressive increase in membership and by May, 1951, there were over 100,000 subscribers. This enrollment represents over 50 per cent of the total population of the Windsor metropolitan area.

Two types of contracts are offered: a limited surgical, and a comprehensive physicians' services contract. Only 1,500 of the more than 100,000 subscribers have chosen the limited surgical contract. The preference shown by the subscribers of this plan for the comprehensive contract is striking in view of the negligible interest in such coverage attributed to Blue Shield subscribers. The question naturally arises: Is this lack of interest an expression of subscriber satisfaction with the limited contract offered by the typical Blue Shield plan? Or is it rather the inability of the subscriber to make known his preference for a comprehensive contract when only a limited contract is available?

The comprehensive contract in the Windsor plan provides general practitioner and specialist care for subscribers and their dependents in the home, doctor's office, and hospital. Included are complete maternity service with prenatal and postnatal care, well baby care, immunizations, annual physical examinations, x-ray examinations and treatment, and refractions. There are no age limits, no exclusions of preëxisting illnesses, no extra charges, not even for night calls. There are, however, waiting periods of 10 months for maternity service, 6 months for preëxisting conditions, and 12 months for annual physical examinations and refractions. Hospitalization benefits are not included, but a majority of the subscribers are concurrently enrolled in the Blue Cross plan sponsored by the Ontario Hospital Association.

Laboratory services other than those performed by a physician in his office are not provided, nor are any nursing, dental, or drug benefits. There are the usual exclusions for treatment for illness covered by Workmen's Compensation, drug addiction, acute alcoholism, and chronic conditions requiring care in an institution other than a general hospital.

More than 95 per cent of the physicians in the Essex County Medical Society participate in the plan. Physicians are paid on a fixed schedule of fees for each service rendered a subscriber, and agree to accept these fees as payment in full for single subscribers with annual incomes of $3,000 or less, and for family subscribers earning $6,500 or less. These income limits are established at levels which, in the Windsor area, mean that almost the entire enrolled population receives benefits on a service basis, that is, without additional charges by their physicians.

The monthly premium for the comprehensive contract is $1.85 for a single employee, $3.70 for man and wife; $5.00 for a family with one child; $6.10 for a family with two children; $7.00 for a family with three or more children.

PLAN OF STUDY

The procedures used in collecting data from a prepaid medical care plan depend largely on the records used in administering the plan. In the Windsor plan there are two basic documents, a physician's service card and a subscriber's

medical service ledger card. The physician's service card, a specially designed I.B.M. punch card, has spaces to record the subscriber's name and contract number, the physician's diagnosis, the services rendered, and the physician's fee for these services. Each physician submits one of these cards monthly for each subscriber to whom he has given care during the month. This card serves as the physician's bill to the plan and is the only record required of him.

In the central office, the information from these physician's service cards is transcribed to the subscriber's medical service ledger cards. One of these ledger cards is maintained for each family or single subscriber. Each ledger card contains a complete record of service including diagnosis, date, number, and type of all the physicians' services received by each member of the family.

Much of the information required for the study could easily be obtained from the routine tabulations of the physician's service cards. However, certain data could be secured only by reference to the subscriber's medical service ledger cards. Preliminary estimates showed that these data could be obtained with desired accuracy from a sample of approximately 1,250 of the subscribers in the plan. A probability sample was selected from the alphabetic file of the subscriber's medical service ledger cards by making a random selection of file drawers and then systematically selecting names of individuals from the cards in the selected drawers. For each individual selected for the sample, a record of all physicians' services received during the study period, October 1, 1949, to September 30, 1950, was transcribed.

Since there was considerable information for the total enrolled population from which the sample was drawn, it was possible to make a number of comparisons between data from the sample and from the total enrolled population.

TABLE 1

Comparison of Enrolled Population with Sample of 1,260 Subscribers, by Sex and Age Groups, Windsor Medical Services, July 1, 1950

Sex	*Percentage*
Female:	
Enrolled	51
Sample	51
Male:	
Enrolled	49
Sample	49
Age	
0–14 years:	
Enrolled	29
Sample	28
15–49 years:	
Enrolled	57
Sample	59
50 and over:	
Enrolled	14
Sample	13

Table 1 shows the results of comparing the age and sex distributions. The same ratio of male to female subscribers was found in the sample as in the total enrolled population. For the age group 0–14 years, the difference between the sample and the total enrolled population was 1 percentage point. In the age group 15–49 years the difference was 2 percentage points. The difference for the age group 50 years and over was 1 percentage point.

These comparisons are examples of the magnitude of the sampling variations. In all cases for which calculations were made, the sampling errors were found to be sufficiently small so that the conclusions drawn concerning the total enrolled population may be accepted with confidence.

SERVICES RECEIVED

Data on the services received by the total enrolled population were readily available from the routine records of the plan. The utilization of services by the average enrollment of 81,902 subscribers for the year 1950 is shown in Table 2.

There was a total of 3,940 physicians' services per 1,000 subscribers in 1950. "Physicians' calls"—office, home, and hospital—do not include major or minor

surgical procedures, the administration of anesthetics, deliveries, radiologic procedures, or refractions, and were rendered at an annual rate of 3,443 physicians' calls per 1,000 subscribers. Physicians made 1 home call for every 5 office calls. The rate of hospital calls, 346 per 1,000 subscribers or 10 per cent of all physicians' calls, is understated because routine postoperative hospital visits are included as part of the surgical or obstetrical procedure and are not recorded separately.

TABLE 2

Utilization of Services by All Subscribers, Windsor Medical Services, 1950

Item of Service	Annual Rate per 1,000 Subscribers	
All services	3,940	
Physicians' calls	3,443	
Office calls		2,551
Home calls		546
Hospital calls		346
Surgical procedures	268	
Tonsillectomy and adenoidectomy		25
Reduction of fractures		13
Appendectomy		8
Dilatation and curettage		6
Gynecological surgery		5
Herniorrhaphy		3
Hemorrhoidectomy		2
All other major surgery		12
Minor surgery		116
Anesthetics		78
Deliveries	26	
Radiologic services	141	
X-ray diagnostic procedures		101
Other radiologic		40
Refractions	61	
All others	1	

Seven surgical procedures—tonsillectomy, reduction of fractures, appendectomy, dilatation and curettage, gynecological surgery, herniorrhaphy, and hemorrhoidectomy—account for over 80 per cent of all major surgery. Gross comparisons of the rates for these seven operative procedures, using the limited data available from other medical care plans, suggest that tonsillectomy alone appears to be performed with greater than customary frequency. By definition, minor surgery includes all surgical procedures listed in the fee schedule at less than $50, excepting tonsillectomy, reduction of fractures, and dilatation and curettage. Three per cent of the deliveries were by Caesarean section.

Age-sex specific utilization rates for all physicians' services, including physicians' calls, surgical procedures, deliveries, radiologic services, and refractions, are shown in Table 3. Females have a higher utilization rate than males, as a whole—4.4 services per female subscriber per year, as against 3.0 for male subscribers, and for each age group except that under 10 years. The age groups 50–59 years and 60 years and over have utilization rates significantly higher than the younger age groups, but even the rate for the age group 60 years and over is not sufficiently high to justify excluding this group from enrollments.

TABLE 3

Utilization of Services by Sample of 1,260 Subscribers, by Age and Sex, Windsor Medical Services, October 1, 1949, to September 30, 1950

Age	No. of Services per Subscriber per Year		
	Total	Male	Female
Total	3.7	3.0	4.4
Under 10 years	4.1	4.5	3.6
10–19 years	2.4	1.9	2.8
20–29 years	3.7	2.1	5.0
30–39 years	3.6	2.1	4.9
40–49 years	3.8	2.4	5.4
50–59 years	4.6	3.8	5.6
60 years and over	5.7	*	*

* Sample too small for reliable rates.

Table 4 shows the distribution of costs for the several types of physicians' services. Over half the total cost of all services rendered is accounted for by physicians' home and office calls, radiologic services, and refractions. Physicians' care for hospitalized patients—that is, hospital calls, major surgery, including anesthesia, and deliveries—takes about 40 per cent of the total cost.

This distribution of costs suggests that the typical Blue Shield plan, limited to physicians' care for hospitalized patients, meets less than half the cost of physicians' care required by subscribers.

TABLE 4

Distribution of Costs by Type of Service for All Subscribers, Windsor Medical Services, 1950

Type of Service	*Percentage of Total Cost*
All services	100
Physicians' calls	47
Major surgery, including anesthesia	32
Minor surgery	5
Deliveries	6
Radiologic services	8
Refractions	2

ABUSE OF SERVICE

There is much speculation regarding the extent of abuse of service by subscribers of comprehensive physicians' service plans, due in large part to lack of data. In the Windsor plan certain relevant data were available from the routine tabulations of physicians' service cards; other data had to be obtained from the sample of the subscriber's medical service ledger cards.

Table 5 shows the utilization of all physicians by subscribers during the study year. Even though physicians' services were freely available to them, 39 per cent of the subscribers did not see a physician during the study year; 36 per cent saw only 1 physician; 15 per cent saw 2 physicians, and 10 per cent saw 3 or more.

Now there is no doubt that "shopping around" for physicians, a particularly virulent form of abuse of service, occurs in prepayment plans just as it does when payment is made out of pocket. One per cent of subscribers in the Windsor plan saw more than 4 physicians in the 12 month period under study. That not all these subscribers are utilizing physicians' services indiscriminately is illustrated by the following case report: A 47 year old woman, a Windsor Medical Services subscriber for over 2 years, uses Doctor A as her family physician. During the period of study in October, 1949, a thyroidectomy for a nodular goiter was performed by Doctor B, a surgeon. The anesthesia was administered by Doctor C. In March, 1950, the patient was treated for influenza by her family physician, Doctor A. In June, 1950, the patient was given a complete ophthalmologic examination including a refraction, by Doctor D. The following month, the patient was again treated by her family physician, Doctor A, this time for a spastic colon. She was referred by him to a radiologist, Doctor E, for an x-ray of the colon with a barium enema. This subscriber received care from 5 different physicians in a 12 month period, but when the illness experienced and the physicians' services received are taken into consideration it does not appear that "shopping around" occurred in this case. The Windsor experience does not support the contention that "shopping around" by subscribers constitutes a problem of such major proportions that physicians' service plans should be restricted to surgery and in-hospital care.

TABLE 5

Utilization of All Physicians by 1,260 Subscribers in Sample, Windsor Medical Services, October 1, 1949, to September 30, 1950

No. of Physicians Seen	*Percentage of Subscribers*
None	39
1	36
2	15
3	6
4	3
More than 4	1

The striking thing about the data presented in Table 5 is not that 1 per cent of subscribers saw more than 4 physicians, but that *39 per cent saw no physician in the plan in a 12 month period*. Forty per cent of these subscribers were 40 years of age and over. Their health status is of course, unknown, since they received no physicians' services during the year of study. One wonders, however, how many preventable, controllable, or remediable conditions remained undetected and without care, particularly among those subscribers in the middle and later years. From the standpoint of preventive medicine, in the Windsor plan at least, there is under-utilization rather than abuse of service. Removal of economic barriers to the receipt of comprehensive physicians' services is not necessarily followed by a deluge of patients.

Another reason frequently given for restricting physicians' services in prepaid plans to in-hospital care is the firmly held belief that subscribers will make unreasonable demands for medical attention outside of ordinary hours. Even comprehensive physicians' service plans regularly impose barrier payments as deterrents to such subscriber demand. The only extra charge for physicians' services in the Health Insurance Plan of Greater New York is a $2 charge for a night call requested and made between 10 p.m. and 7 a.m. In the Windsor Medical Services, where there is no such charge, it was found that during the study year fewer than 3 per cent of subscribers received night calls, that is, a physician's home call made between the hours of 10 p.m. and 8 a.m. There were only 42 night calls per 1,000 subscribers during the study year. Although Windsor subscribers may, with no extra charge, call a physician at any time of day or night, there is nothing here to suggest abuse of service.

Table 6 relates to the 61 per cent of subscribers who received physicians' services during the study year. Over half, or 58 per cent, saw general practitioners only; 31 per cent saw 1 specialist; 8 per cent, 2 specialists; and 3 per cent, 3 or more specialists. Thirty per cent of the subscribers who received care from a specialist were not seen by a general practitioner during the study year. A subscriber's record indicating physicians' services from both a general practitioner and a specialist does not necessarily imply a referral. It is probable, therefore, that the percentage of subscribers who received specialist care without being referred by a general practitioner is larger than 30 per cent.

Abuse of service is sometimes interpreted as the excessive and uncontrollable demand made by newly enrolled subscribers for physicians' services, arising from a backlog of unmet medical need. This interpretation makes prepayment plan administrators cautious in eliminating restrictions on physicians' services and is used to justify waiting periods for preëxisting conditions. The experience of two other plans providing comprehensive physicians' services is relevant in this connection. In the Health Insurance Plan of Greater New York, where there are no waiting periods or extra charges for preëxisting condi-

TABLE 6

Utilization of Specialists by 769 Subscribers in Sample Receiving Physician's Care, Windsor Medical Services, October 1, 1949 to September 30, 1950

No. of Specialists Seen	*Percentage of Subscribers*
None (general practitioners only)	58
1 specialist	31
2 specialists	8
3 or more specialists	3

TABLE 7

Relation of Length of Time in Plan and Cost of Services for 1,260 Subscribers in Sample, Windsor Medical Services, October 1, 1949 to September 30, 1950

Time in Plan and No. of Subscribers	*Participant Months at Risk and Total Cost of Service*	
Less than 1 year (263, or 21% of subscribers):	Participant mos.:	9%
	Total costs:	9%
1–2 years (181, or 14% of subscribers):	Participant mos.:	16%
	Total costs:	15%
2–3 years (413, or 33% of subscribers):	Participant mos.:	38%
	Total costs:	38%
3–4 years (265, or 21% of subscribers):	Participant mos.:	24%
	Total costs:	26%
More than 4 years (138, or 11% of subscribers):	Participant mos.:	13%
	Total costs:	12%

tions, subscribers usually have a higher utilization rate for a short time after they join the plan and the rate tends to drop later to a level characteristic of all subscribers.[1] In the Permanente Health Plan, in which there are likewise neither waiting periods nor extra charges for preexisting conditions in group subscribers, lowest utilization rates are found, in general, among persons with the longest period of membership. For some age-sex groups in the Permanente Plan no pattern of utilization in relation to length of membership is evident. However, for those groups where there is 100 per cent enrollment, as in labor union health and welfare agreements, utilization rates are *lowest* during the first year of membership and gradually increase as the subscriber becomes educated to the benefits to which he is entitled.[2]

This lag in the utilization of benefits has also been observed in the Rhode Island and California compulsory disability insurance programs, and to the degree to which it may be operative in medical care plans, it would depress utilization rates among new subscribers even where no waiting periods exist.

The Windsor plan, as previously noted, has waiting periods of 6 months for preëxisting conditions and 10 months for maternity care, so that it is not possible to evaluate completely the utilization rates of subscribers in the plan for less than 1 year. The data presented in Table 7 relate length of membership to cost of service. They are not consistent with the assumption that the demands made by new subscribers are uncontrollable when comprehensive physicians' services are offered. The 21 per cent of subscribers in the sample who joined the plan during the study year account for 9 per cent of the total participant-months at risk and also for 9 per cent of the total costs of service. The 14 per cent who, at the time of the study, had been enrolled in the plan for 1–2 years account for 16 per cent of the total participant-months at risk and 15 per cent of the total costs. For no group of subscribers classified by length of membership is there a significant difference between the percentage of total participant-months at risk and the percentage of total cost of service. It is evident that the Windsor plan is not overburdened by new subscribers making excessive demands for service. Waiting periods afford the administrator sufficient control to permit comprehensive physicians' services to be offered.

Table 8 shows the relationship between length of membership and the re-

TABLE 8

Relation of Length of Time in Plan to the Percentage of 964 Subscribers in Sample Full 12 Months of Study Receiving Physicians' Services, Windsor Medical Services, October 1, 1949 to September 30, 1950

Time in Plan	*Percentage of Subscribers Receiving Services*
1–2 years	70
2–3 years	71
3–4 years	70
More than 4 years	71

ceipt of physicians' service, measured by the percentage of subscribers receiving such service. It is based on an analysis of the records of those subscribers in the sample who were in the plan for the entire year of study. The differences among the groups are less than would be expected from sampling variations and are not statistically significant. In this plan, "seasoning" of subscribers beyond the first year of membership is not evident.

Another approach to the evaluation of abuse of service lies in measuring the number of physicians' services received in behalf of certain conditions for which generally accepted standards exist. For example, the accepted standard for an uncomplicated, full-term pregnancy is 8 to 10 prenatal calls and, following delivery, 1 or 2 post-partum calls. For the total subscriber population in 1950, there was an average of a total of 8 such calls for each delivery. Measured by standards of acceptable obstetrical care, there was no over-utilization of service among the childbearing subscribers in the Windsor plan.

Basically, the extent of abuse of service must be measured, in large part at least, against subscriber morbidity experience which is an expression of need for physicians' services. The problems involved in the collection, analysis and interpretation of morbidity data from prepaid medical care plans have been pointed out by Deardorff and by Weissman and will be more fully discussed by the present authors in a subsequent paper. Suffice it to say here that the amount of illness recorded in prepaid plans providing comprehensive physicians' services measures only that portion of the medical care needs of the subscriber population that comes to the attention of the physician in the plan and is recorded by him. Illness not receiving physician's care, whether the subscriber recognizes the illness as such or not, is not measured. There also are not taken into account those illnesses for which there are sources of physician's care outside the plan, such as in-plant industrial medical services, Workmen's Compensation, health department clinics, veterans' medical facilities, and others. In short, the morbidity data obtained from prepaid plans does not represent the total illness experience of the subscriber population. To the extent to which total illness is understated, these morbidity data fail to indicate the total need for physicians' services and have limited usefulness in evaluating the extent of abuse of service by subscribers.

CONTROLS ON ABUSE OF SERVICE

The data thus far presented fail to give evidence that abuse of service by subscribers occurs to any extent. It cannot be stated with certainty that no subscribers make demands for "unnecessary" and excessive physicians' services. But if such abuse occurs, it does not constitute a major administrative problem. This is not to say that the Windsor plan is without administrative controls on abuse of service. There are such controls; they focus, however, on the participating physicians rather than on the subscribers. Instead of trying to

limit the services subscribers may seek, the plan controls the services the physicians render. This orientation toward abuse of service is not frequently observed in prepaid plans based on fee-for-service payment, but the Windsor experience points to its validity.

Briefly, controls on abuse of service by physicians are applied as follows: Bills submitted for multiple services are reviewed by a committee of participating physicians. Only bills for home, office, and hospital calls are subjected to this review. Bills for major and minor surgery, radiologic services, refractions, and all other special services are routinely scrutinized only for conformity with the fee schedule. Multiple services to a subscriber are considered in the light of the condition for which these services have been rendered and an attempt is made to arrive at a proper level of service according to patterns of practice generally followed by the physicians in the plan. If the services rendered a subscriber are judged to be excessive, the committee approves payment only for that number of services considered necessary.

In 1950 the reviewing committee reduced the total amount of all physicians' bills submitted for home, office, and hospital calls, by about 6 per cent. In view of the relatively small amounts by which physicians' bills are reduced, one wonders whether psychological factors resulting from the knowledge that a system of controls exists are not a more effective control device than the committee's review of physicians' bills.

Decisions by the reviewing committee are in general accepted without protest and the effectiveness of this relatively simple control procedure is recognized by the administrators of the plan. Nevertheless, they have expressed dissatisfaction with this form of control. It is arbitrary and subjective. Since it is not based on objective criteria, it cannot always be applied in a consistent fashion. For these reasons there has been under study for some time the development of a control formula based on a statistical analysis of physicians' services. Such a control formula would overcome the objections to the present control procedure and would have wide applicability to other comprehensive plans paying physicians on a fee-for-service basis.

SUMMARY

A year's experience of Windsor Medical Services, a comprehensive plan based on individual practice with participating physicians paid on a fee-for-service basis, is presented.

Analysis of the services received indicates that abuse of service by subscribers is minor. Excessive demands for service, "shopping around" for physicians, unreasonable requests for medical attention outside regular hours, and overutilization of service by newly enrolled subscribers are not administrative problems of major proportions.

The contention that physicians' services must be restricted to care for hospitalized patients because of abuse of service by subscribers is not supported by the experience of this plan.

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The Dentist's Responsibility in Community Water Fluoridation Programs*

ROBERT A. DOWNS, D.D.S., M.S.P.H

Chief, Public Health Dentistry Section, State Department of Public Health, Denver, Colo.

IN the entire history of the health professions I doubt that there is record of such an about-face in interest as has taken place in the dental profession concerning fluoride and its effects on human beings. In the beginning, the entire interest of the profession was centered upon mottled enamel, or "Colorado brown stain," as it was called. The only question was how to eliminate it. With conclusive evidence at hand showing that an optimum concentration of fluoride reduces the prevalence of dental caries by two-thirds, interest is now centered on the use of fluoride to help control dental caries. The current question is: How do we use it, and where does the responsibility rest for applying it on a widespread basis?

The dentist's responsibilities in the fluoridation of public water supplies might well be listed under four major headings:

1. Promoting fluoridation
2. Supplying factual information about fluoridation
3. Determining the need for fluoridation
4. Evaluating the results of fluoridation

1. *Promoting Fluoridation*

As the oral cavity and the teeth in particular are universally recognized and conceded to be primarily the responsibility of the dentist, it is appropriate that the dental profession assume primary responsibility for promoting fluoridation projects, and I am proud to say that to date the dental profession has done exactly that. For, in fluoridation, the dental profession for the first time has a workable and economical procedure for the mass control of dental caries.

Public health workers in general have had a tendency to shy away from the dental caries problem. It is obvious that if attacked from the angle of restorative dentistry alone, the solution of this vast problem appears utterly hopeless in view of the cost in dollars and cents, as well as the limited dental man power available at present and in the foreseeable future.

At the present time the public receives dental treatment for only about one-fourth of the dental caries that occurs. Through fluoridation, a procedure is available that will reduce dental caries by two-thirds for the individuals whose teeth are calcifying, without reducing one iota the over-all amount of restorative dentistry now being received by the public.

The practising dentist, as well as the public health dentist, has not only the opportunity but a direct responsibility to society to promote fluoridation and thus improve the oral health of low-fluoride communities (that is, communities with a water supply containing less than 0.5 p.p.m. fluorine) in a manner

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that appears almost miraculous. In other words, by fluoridation, the community with little or no fluoride in its local water supply can attain the same low attack rate of dental caries that is enjoyed by those fortunate communities whose water supply is fluoridated automatically by nature. The average 12–14 year old child would have only 3 permanent teeth attacked by dental caries instead of the usual 7 to 10.

In the promotion of this program the practising dentist has a responsibility to see that his local and state dental societies adopt a positive fluoridation policy with no "ifs" and "buts" about it. Through his dental society he also has the responsibility to assist in the adoption of such a policy by his state board of health.

The public health dentist has an additional responsibility to help develop close, coöperative teamwork in the health department, particularly between the dental and engineering staffs. Certainly the personnel of the health department must be in agreement on their fluoridation policy.

The public health dentist, in cooperation with his health department, is also responsible for informing state and local medical and dental societies on the current status of fluoridation.

While on this subject, I might add that one of the principal responsibilities of the dental profession is self-education. It is important that as a group all dentists tell the same story, and that they keep themselves informed on the essential features of fluoridation and the requirements associated with the promotion of fluoridation projects.

2. *Supplying Factual Information About Fluoridation*

Assuming that a vigorous campaign for the fluoridation of the community water is under way, the public will naturally look to the dental profession, along with the medical and engineering groups, for factual information in answer to such questions as: Is it harmful? How much will it cost? What will it do? How do you do it?

As we are a group of professional public health workers, I shall not take the time to reiterate the epidemiological studies of McKay, Dean, and others, or to contrast the fluoride vs. nonfluoride communities. We are all familiar with the reports showing two-thirds less caries, 95 per cent less caries in proximal surfaces of upper permanent incisors, and the rest of the oft-repeated facts about fluoridation. I do think it might be well to review briefly what fluoridation actually has accomplished. As a typical example, Dean states in a recent paper:[1]

> In 1949, nearly five years after fluoridation began in Grand Rapids, the caries rates of the selected age groups of school children were compared with those of the corresponding 1944–1945 groups. The results showed a general reduction in decay of the permanent teeth. This was particularly striking at the younger ages, amounting to 73 per cent in the five-year-olds. The reduction at age six was 51 per cent; at age nine, 36 per cent; at age 13, 17 per cent; and at age 16, 12 per cent. Similar reductions in the amount of dental caries have been reported from Newburgh (N.Y.), Brantford, (Ont.), Sheboygan (Wis.) and others.

All the reports on fluoridation from every community reporting have been uniformly favorable and comparable. Fluoridation projects in Texas, Idaho, Ontario, Michigan, New York, and Wisconsin report the same comparable results.

3. *Determining the Need for Fluoridation*

Due to excellent publicity in lay publications such as *Reader's Digest* and *The American Magazine*, and to the energetic activities of organizations such as the Junior Chambers of Commerce, as well as to the professional efforts of the dental profession and health departments, the number of communities that

are actively interested in fluoridation at the present time is growing by leaps and bounds. Stadt[2] has compiled a list of 82 places, representing a population of 1,730,284, actually fluoridating; an additional 94 communities, with a population of 5,884,841, which have approved fluoridation and are awaiting the installation of equipment; and an additional 167 communities, representing 14,701,317 people, that are seriously considering this project—making a grand total of 343 communities with a population of 22,316,442 whose interest has been aroused in fluoridation. The potential job before us is the addition of fluorides to 16,747 public water supplies serving 89,378,280 people.

As the result of this "popular" interest, many communities have begun to agitate for fluoridation before knowing whether they already have the recommended 1.0 p.p.m. or more of fluoride in their water supply. All communities should have detailed analyses of the chemical content of the water serving them, and if the fluoride level approaches closely the optimal amount, there should be an educational (or publicity) program to inform the community. It is good public relations to publicize what the community *has* rather than to be always belaboring the things it does not have.

One of the dentist's greatest contributions in this entire program is establishing the base lines and evaluating the results of fluoridation. Fluoridation will not accomplish complete prevention of caries, but will tremendously reduce it. In other words, there will still be some dental caries developing in native children whose teeth calcify on the fluoridated waters, but the rampant caries will be eliminated. The caries that does occur will consist primarily of the pit and fissure type of the posterior teeth. Almost all the smooth surface caries of the anterior teeth will be eliminated. Dentists must examine a sufficient number of native children and record their findings accurately, using the forms and procedures recommended by their state health department, so that the data will be comparable and sound enough to stand up under criticism. The local dentists must be instructed properly and shown accepted techniques and procedures including the necessity of segregating children into groups classified as having continuous or interrupted residence.

The basic information so obtained is valuable not only for fluoridation projects but is most useful for the planning of a comprehensive community dental health program. Memories are inclined to be a little short, so perhaps when times are a little "harder" and the city fathers are trying to trim their budget a little further, one of them may receive a fair-sized statement from his personal dentist for services rendered to his child and jump to the conclusion, "There! this fluoridation doesn't work—look at this bill—let's cut it out and save the money." It is really very difficult for people to conceive how so much can be accomplished for so little money. In fact, the statement has been made that one of the troubles with fluoridation is that it is too cheap. Hence it is important that an accurate base line be obtained of the actual dental attack rate that exists prior to fluoridation, for the purposes of later comparison and determination of reductions in caries following fluoridation.

4. Evaluating Results

After sufficient time has elapsed, about four or five years, the dentist has a responsibility to evaluate the accomplishments of the procedure. This evaluation entails the same steps that were undertaken in establishing the base line.

The comparison of this information with previous findings should dispel all doubt as to the advisability and value of fluoridation in the specific community.

Such data are also most valuable for evaluating the quantity and effectiveness of the dental care received by children in the community; and for maintaining interest of the profession and the public in the dental health of the community.

In conclusion, let us not forget that the dentist has a moral responsibility to reëmphasize the fact that fluoride is no panacea for dental caries, or for all dental diseases. It has no effect so far as we know upon dental anomalies, malocclusions, oral cancers, and diseases of the gingival tissues. It does not prevent *all* caries. In other words, there still is no substitute for early and regular dental care by a dentist that includes frequent dental examinations and filling of all cavities; for accepted oral hygiene practice that includes recommended use of toothbrush and regular prophylactic treatments by the dental hygienist or dentist; and for the need of an adequate diet for normal growth and development, with the restriction of sweets.

The responsibility of the dental profession in fluoridation is determining the efficacy and need for the procedure; initiating and promoting the program; and, finally, evaluating the dental health accomplishments of fluoridation.

Up to the present time dentists have sponsored and pushed a majority of the fluoridation projects that are now in operation or that have been approved. Their record is extremely good, and I think they deserve hearty commendation for their active interest, considering the implication that the general adoption of fluoridation will profoundly alter the future practice of dentistry in those places where the public water supply has less than the optimal amount of fluoride.

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Cities and Tuberculosis Mortality

The National Tuberculosis Association has recently published *Tuberculosis Mortality Among Residents of Large American Cities.* This is the first such tabulation that has been available since 1941.

The recent study includes 106 cities with populations of 100,000 or more, 15 of which were not in this category in the earlier study. The average annual tuberculosis death rate in the 106 cities for the 3 year period was 29.6, with a range from 11.3 to 116.5. The analysis, based on data compiled by the U. S. Bureau of the Census and the National Office of Vital Statistics, was made by the Association's Statistical Service. Its director is Mary Dempsey. National Tuberculosis Association, 1790 Broadway, New York 19.

Influence of the Dynamic Character of Chronic Disease on the Interpretation of Morbidity Rates*†

PHILIP E. SARTWELL, M.D., M.P.H., F.A.P.H.A., AND MARGARET MERRELL, Sc.D.

Associate Professor of Epidemiology and Associate Professor of Biostatistics, Johns Hopkins School of Hygiene and Public Health, Baltimore, Md.

A CHRONIC disease is one which persists over a long period of time, sometimes even for most of the individual's life. Because of this persistence, the term chronic has a tendency to conjure up ideas of stability and unchangeability and it is easy to lull ourselves into thinking that a chronic disease means an essentially static condition. This implies that a classification of the population into those having the condition and those free of it is sufficient. We tend to think that if we have measured either the rate of acquiring the disease or the proportion of people who have it at any time, we have a good comprehension of its distribution over the population; and that if we have made both these measurements we have a perfectly adequate description. If this were actually the case, our analytical problems in dealing with chronic disease would be simple and our knowledge of its epidemiology would be much greater than it now is.

However, one characteristic of almost everything that persists for a long time is that it changes with time. It is changeability and variation, not stability, that is in fact the dominant characteristic of most long-lived conditions. This means that additional indices descriptive of these changes are needed. Furthermore, it means that the interpretation of the conventional prevalence and incidence figures is more involved than in acute disease. It is these issues which we wish to discuss.

The kind of morbidity index which is chosen in studying a disease will depend upon the kind of information desired; thus, the medical care administrator will at times simply be interested in the prevalence of severe cases of a disease in order to estimate the number of beds needed, or the health officer may wish to know what population group will yield the most cases if a screening test is applied. The epidemiologist, however, is constantly seeking as complete a picture as possible of the distribution and course of the disease in specific segments of the population in order to arrive at an understanding of its etiology, pathogenesis, and control.

In any disease, whether acute or chronic, the individual passes from the state of freedom from the disease, to the state of having the disease, to death or a return to freedom from the disease. In an acute disease we attempt to

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measure within a population group the rate or rapidity of passage from one of these states to the next; thus obtaining the incidence rate, the death rate, and the recovery rate. Information regarding inapparent cases and states of susceptibility or immunity, if obtainable, is also of value. However, from the epidemiologist's point of view little interest attaches to changes during the brief period of clinical illness.

In a chronic disease, on the other hand, we recognize a wide variety of patterns of change within the protracted period of the existence of the disease. The illness may go on to death, may continue through various phases for the lifetime of the patient until death takes place from other causes, or may be completely cured. Whatever the outcome there will be changes of state, in each case, with the passage of time, and the rates of change from one to another of the stages characteristic of the disease are of the greatest relevance to our understanding of its epidemiology.

DEFINITION AND CLASSIFICATION

For the purposes of this discussion a limited meaning will be given to the term chronic disease. There is a class of conditions resulting from an acute process in which there remains a residual impairment of structure or function that lasts for the lifetime of the individual. Secondary physical or mental changes do sometimes occur long after the acute episode but in general the condition is static. Examples are the crippling resulting from injury or paralytic poliomyelitis, and the entire class of congenital defects. We shall omit these from our discussion.

An attempt has been made to classify the chronic diseases from the standpoint of their dynamic course. Much difficulty was encountered and the rough classification which follows is furnished merely as a convenient starting point for discussion.

The first group is that represented by untreated cancer, which progresses rather steadily in most cases and terminates fatally, though the rate of progress varies from case to case and between different pathologic types of disease.

A second class is represented by degenerative vascular disease, in which there is slow progression of the basic vascular changes, punctuated by unpredictable acute episodes such as coronary occlusion or cerebral hemorrhage.

The third group is a large and heterogeneous one, characterized by a highly variable course with unexplainable exacerbations and remissions, or sometimes a succession of defined stages. The illness may terminate in death or complete recovery or may persist throughout life without affecting life expectancy, although it may cause much suffering and disability. Examples are peptic ulcer, rheumatic heart disease, rheumatoid arthritis, and tuberculous infection.

Another group consists chiefly of endocrine deficiencies in which substitution therapy is capable of arresting or eliminating some, at least, of the changes so long as it is continued. Diabetes mellitus and thyroid deficiency are examples.

Finally, we have a class of diseases resulting from prolonged exposure to some recognized environmental factor. In these diseases the dynamic course is generally determined or at least strongly influenced by the intensity and duration of exposure to the environmental factor. Under this heading we would now include chronic intoxications, dietary deficiency diseases, and such conditions as the pneumonoconioses. This group may prove to be much larger than we now realize.

MEASUREMENTS OF COURSE OF DISEASE

In this classification we have used such words as progressive, variable, and unpredictable. Such terms, it must be

remembered, apply to the course in individual cases, but the epidemiological approach is in terms of groups rather than individuals. We may hope to distinguish between patterns or rates of progression in subgroups of chronic disease patients and thereby obtain important clues as to factors in the disease. This approach to rates of progression from stage to stage is emphasized, not for its obvious bearing on the evaluation of therapy but because it may well be as helpful as a knowledge of incidence rates in furthering our understanding of the epidemiology of a disease.

In order to make such an approach it is essential that stages in the disease be recognized. One cannot measure the rate of change from one state to another unless these states are defined. Such definitions are usually extremely difficult to set up, particularly for that large group of chronic diseases characterized by irregular remissions and progressions. In some diseases such as tuberculosis, classification on two axes, anatomical extent and degree of activity, is involved. It is doubtless this difficulty that has led us so often to drop the attempt to classify any change of state except death in measuring the course of chronic disease. Yet the longer the duration of the disease and the more variable its behavior, the greater the need for other landmarks than death in describing its course.

For certain chronic diseases such as tuberculosis and syphilis, considerable effort has been put into developing and revising classifications of stage. A valid classification depends on understanding the pathogenesis of a disease, but attempts to classify it provide a stimulus to the acquisition of more fundamental knowledge of a disease process.

The simplest case is that of the few diseases where a numerical scale exists which may be related to the severity of the disease. In treated diabetes, if dietary and other factors remain constant, the amount of insulin therapy necessary to control the blood sugar level might be used as such an index. By following the insulin requirement of groups of diabetics one might determine the rate of progression of their disease. Does a population group having a high diabetes incidence rate produce diabetics that progress rapidly in their disease? Knowledge of the extent to which incidence rates and progression rates are correlated will furnish new leads to pursue in the understanding of the disease.

For most chronic diseases we do not have a ready-made scale. Thus, the division of cancers into stages is a most difficult matter, but a beginning has been made in the case of certain cancers accessible to direct observation, such as breast and cervical cancer, using extension to adjacent structures, regional and remote metastases, as criteria. In addition to obtaining survivorship rates for cases detected in each stage, such classifications could be employed in an attempt to develop rates of progression from one stage into the next.

At times we may turn to indices which are of a social rather than a pathological nature. Thus, for schizophrenia, admission to a mental hospital and discharge from the hospital may be useful stage definitions. And for any chronic disease, non-disability and disability are possible states to define, on the basis of the individual's ability to carry on his work or his requirement for care. Actually, disability, if carefully appraised, may be a more meaningful index in many conditions than any clinical or laboratory test yet devised. Cross-sectional measurements under this classification have proved useful in indicating the chronic disease load, but up to the present we have learned very little about the rate at which non-disabled persons move to the disabled state or about the rate at which the disabled revert to the state of non-disability in

any disease. Such indices would permit at least a beginning in the quantitative study of the course of disease.

INFLUENCE OF CHRONICITY AND VARYING COURSE ON INTERPRETATION OF CONVENTIONAL RATES

Of the three principal tools which the epidemiologist employs in studying the distribution of diseases—incidence, mortality, and prevalence—the last has found its chief use in the study of chronic diseases because prevalence can be estimated through a single case-finding survey of a population group. The comparisons most frequently attempted with these rates are between racial groups, age groups, socio-economic levels, geographic regions, and different time periods. The dynamic course of chronic disease can affect the interpretation of the conventional indices, especially the prevalence ratio, with respect to all these factors. A few illustrations of this fact will be cited.

Nearly everywhere in the United States, whether as a result of true racial differences in resistance or of socio-economic factors, tuberculosis mortality in the Negro race is higher than in the white race. Yet when attempts are made by the mass survey technique to establish prevalence ratios for previously undisclosed tuberculous disease, or when the prevalence of known cases on tuberculosis registers is studied, the ratios are regularly found to be as high among whites as Negroes, or even slightly higher. The available evidence indicates the explanation of this paradox to be that the average duration of life from onset among Negroes is shorter than among whites. Thus, it is the rate of progression, rather than either incidence or prevalence, that furnishes the key to the racial difference in mortality.

In the interpretation of geographic differences in prevalence there is a similar need for progression rates. A high prevalence of a chronic fatal disease in a region does not necessarily imply a high incidence. If incidence were actually equal in two areas but some environmental influence in one area operated to make the disease more benign and hence more prolonged, then that area would have the higher prevalence, especially in the older age groups.

In studying the time trend of a disease, similar considerations hold. Improvements in therapy may operate either to shorten the course of a disease by bringing about more speedy recovery or, in diseases which may be controlled but not cured, to lengthen the course by prolonging life. Diabetes mellitus is an example of the latter. Although it cannot be documented, it is highly probable that the prevalence of diabetes is higher today than it was three decades ago, owing to the effect of insulin. Moreover, the trend of recorded crude mortality rates for diabetes, and of age-specific rates in the older age groups, has been upward for many years.

A different kind of problem in the interpretation of prevalence ratios arises from the fact that the person as well as his disease changes with time. This may be illustrated by attempts to compare prevalence in different socio-economic strata. The term stratum, borrowed from the geologists, is a poor one because it connotes a permanent layer in society. While economic strata can be arbitrarily defined by appropriate indices, the individuals in a particular stratum are by no means permanently fixed in it. Hence, if the prevalence of a disabling chronic disease is found to vary inversely with economic level, the explanation may either be that environmental influences associated with poverty predispose to the disease or that the existence of the disease has forced the individual or family downward into a lower stratum. To determine the correct explanation, we need to study incidence, not prevalence; to identify each case at an early stage in the disease; and to follow up each indi-

vidual from the standpoint of both medical and socio-economic changes.

One more illustration of these time effects on prevalence ratios will be given. It is common to survey a population group by means of some biologic test, such as the tuberculin or histoplasmin reaction, which we think identifies those persons who have sustained past infection with a specific organism. If the survey has included a sufficiently broad age range, we may find, when percentage of positives is plotted against age, the characteristic S-shaped curve which tuberculin surveys of fairly heavily infected populations have often revealed in the past. These findings have the usual limitations of field studies, inherent in the reliability of the test and the selection of the test population. If we are satisfied on these grounds, we would like to interpret the curve in terms of age-specific infection rates. We might be tempted to take the derivative of the curve as a measure of the risk of infection at different ages, and at times this method might give a fairly decent representation.

A number of factors, however, make it dangerous to draw such inferences. One of these is the possibility that the survivorship of infected persons is substantially less than that of uninfected persons and that this difference in survivorship varies with age of infection (as is quite probable in tuberculosis). Another is that time trends in the risk of infection, rather than age differences *per se*, are responsible for the shape of the curve. The only way to avoid these confusing factors and others that have not been specifically mentioned is by a program of periodic retesting of the same individuals in a population, which will give us something more nearly approaching the true rates of infection and reversion.

Essentially all the problems of chronic disease epidemiology revolve around the time factor, since every characteristic by which a group of people is commonly classified, except their sex and race, can change with time.

While the foregoing illustrations have dealt with limitations of prevalence and mortality rates, the interpretation of observed incidence rates also offers a challenge. What is actually obtained may more properly be termed a discovery rate, which may be quite different from the true incidence rate. Of the cases with onset in any time period, some will be discovered early, others late, perhaps at death, and still others will escape recognition entirely. Thus, the discovery rate of any period will include cases with onsets covering a long time span, and moreover will be influenced by the clinical level at which cases are recognized. In tuberculosis this last point is of great importance in determining the total and relative magnitude of the rates in different groups, since many cases do not progress beyond the minimal stage. The introduction of mass survey techniques has had gross effects on the stage at discovery and thus on morbidity rates in both tuberculosis and syphilis.

The new concept of multiphasic screening has attracted many enthusiastic supporters who wish to extend the technique as a service program, and others who feel that it will provide important new information about chronic diseases and hence can be regarded as a research program as well. We do not wish to deny that the multiphasic screening technique is a valuable addition to our armamentarium. However, from the standpoint of a service function, it is obvious that we cannot give sound advice to people found to have some abnormality unless we know something about the significance of that abnormality in terms of what happens to groups of people who have it as compared to others. Too often we assume that we do know this when actually we do not. The clinician knows in a general way the prognosis for those hypertensive

persons who come under his care, but he has not had opportunity to learn what happens to those discovered accidentally, without symptoms.

Thus, further field research is essential before the value of multiphasic screening can be fully realized. This research will not consist of doing more and more mass surveys on larger and larger groups of persons. It must be designed to follow systematically over long periods the progress of individuals who have been singled out in such surveys as having various types of abnormalities and, in addition, control groups free of these abnormalities. In such studies the considerations advanced in this paper as to rates of morbidity and rates of progression will be pertinent.

This kind of program has been developed more effectively in a few studies of tuberculosis than for any other disease. First, the members of a community are enumerated and classified with respect to all the attributes which we think may be pertinent to the disease. In view of migration and the instability of social and economic groupings the population census needs to be repeated at appropriate intervals. The community is surveyed and divided into uninfected, infected, and clinically ill categories with the aid of tuberculin tests, x-rays and laboratory services, and a register of all individuals established.

Continued observations are then made to determine what individuals have undergone the transition from one to another of these states. The rates of change can then be determined for each subgroup of the population. This task is accomplished not by a single Herculean effort but by long-sustained application of interest, effort, money, and careful planning.

SUMMARY

The importance to the epidemiologist studying a chronic disease of a knowledge of the variable dynamic course in different population groups has been considered. Methods of measuring rates of change from one to another stage of a disease have been suggested and their dependence on an adequate classification by stages pointed out. The effects of chronicity and variable course on the interpretation of the conventional frequency indices is discussed, and it is emphasized that studies in which individual members of population groups are kept under periodic observation are needed more than are one-time prevalence surveys, in order to advance our knowledge in this field.

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THE PRESENT-DAY PROBLEMS OF CHILDBIRTH

THE series of papers on Maternal and Child Health presented in the present issue of the JOURNAL focus attention on a major problem of public health which gives cause for gratification at past achievements—and also a stimulus to much needed further accomplishment.

Since the studies on this subject made by the Children's Bureau—and, particularly by the New York Academy of Medicine fifteen years ago—progress has been notable and encouraging. The New York report demonstrated that two-thirds of the deaths associated with childbirth at that time could be prevented; and this ideal has already been essentially realized. Yet there is more to be done. Hemorrhage, toxemia, and infection still take a heavy toll of human life, although the best hospital services deliver thousands of babies with scarcely a single complication of these types.

A competent authority in this field has estimated that diseases of the mother and of the child, associated with childbirth, if added together, would rank as our third leading cause of death, following diseases of the heart and arteries and cancer. We owe to the mothers and children of the community a more complete and effectual defense program than now exists—a program which modern advances in nutrition, in the use of antibiotics, and in mental hygiene make easily possible.

There is a real challenge to the Health Department to develop a new and active program of service, to meet the problems of today and not of yesterday. Where infant diarrhea has been eliminated and the untrained midwife controlled, there is still urgent need for better and earlier medical and nursing care (to prevent and not merely to mitigate the catastrophe of prematurity); and for better delivery care than is now provided by many hospitals. Tactful counseling by the Department to physicians, nurses, midwives, and hospitals, stimulation of more extended teaching of obstetrics and pediatrics to future practitioners of medicine and nursing (with the offering by the Health Department of suitable refresher courses), and

payment for complete medical care when necessary, all offer promising possibilities for the future. Continuing research on the failures in present-day practice is essential; and every case of prematurity, of abnormal labor, or of fetal or infant death should be the subject of intensive study.

The expectant mother is not a piece of pelvic machinery, but the most important link in the chain of human life. Childbirth is not only a natural function, but a rich human experience for both mother and father. Mothercraft involves not only a physiological process, but a profound contribution to the mental balance of future generations since the mother-child relationship is perhaps the most basic factor in laying the groundwork for emotional balance.

In this process the newer humanizing practices in childbirth, including the better preparation of both mother and father, avoidance of unnecessary anesthesia, and "rooming-in" can play a major role. The Health Department could perhaps render its greatest service in this field by using its influence to promote the utilization of these practices.

EXPANDING STATE HEALTH LABORATORY SERVICE

THE winter of 1887–1888 marked the beginning of public health laboratories in the United States. In November, 1887, the Lawrence Experiment Station of the Massachusetts State Board of Health was established; but this was a research institution rather than one which provided direct service to the public. The opening of the Hygienic Laboratory at Ann Arbor in the same winter by the State of Michigan was the first enterprise of the second type. The first municipal laboratory also began work in Providence, R. I., in the year 1888. The New York City Laboratory, under W. H. Park, came in 1892.

A review of state laboratory development a quarter of a century later[1] showed that in 1914 every state (except Alabama, which failed to reply to the questionnaire) provided laboratory service to its physicians and its people. Diagnoses for diphtheria, tuberculosis, typhoid fever, gonorrbea, syphilis, glanders, and rabies were almost universal, as was bacterial examination of water and milk. Typhoid vaccine was provided by 19 states, but no other vaccines were distributed in more than a few jurisdictions. Food and drug examinations were made by about half of the state boards of health.

Today the work of the state laboratory has broadened to an astounding degree. Of the bacterial and protozoan diseases, some twenty are now diagnosed by routine laboratory procedures; while many states provide special expert knowledge in regard to more exotic infections imported from other countries. The volume of the work is large. The State Laboratory of Minnesota makes about 100 sputum examinations a day for the tubercle bacillus and nearly 1,000 blood examinations for syphilis.

Many of our larger state and city laboratories prepare and provide diagnostic, prophylactic, and therapeutic products such as sera, antitoxins, vaccines, and antibiotics. Growing interest in the constitutional disorders of later life is broadening the scope of the laboratory still further. Multiphasic screening procedures

must further stimulate this trend. Tests for blood sugar to discover diabetes and examination of body specimens for the presence of cancerous cells are likely to become far more important than the recognition of diphtheria and typhoid germs.

Recent reorganization of the laboratory service of the State of Massachusetts well illustrates such trends. It has become the "Massachusetts Institute of Laboratories," with the following four major divisions: the Biological Laboratory, the Diagnostic Laboratory, the Wassermann Laboratory, and the Blood Plasma Laboratory.

The Diagnostic Laboratory has supervised a valuable pilot mass blood-typing program carried out by the Massachusetts Civil Defense Agency[2] to study "the cost and feasability of mass-typing including both ABO groups and Rh factors," and also to accumulate a register of suitable potential blood donors in case of disaster. A preliminary study of the first 3,100 samples by both tube and slide tests indicated that divergencies were negligible, and the slide test only is now used. When tests are made in a factory, as is commonly the case, the worker is off the job for only 15 minutes. The team, by the use of the slide test, can type 10 people in 15 minutes; and with allowance for travel, setting up the apparatus, and cleaning up afterwards, 200–250 typings a day are actually performed and identification cards given to each subject tested.

The work of the Blood Plasma Laboratory is of special interest and importance.[3] In 1945 this laboratory sent out mobile units to various parts of the state to collect blood which could be separated into plasma and fractions of plasma. More lately it has concentrated on preparation of whole blood for transfusions, but this part of the program has now been turned over to the American Red Cross. Between 1948 and 1951 the laboratory, in coöperation with Harvard University, served as a pilot plant for research on the fractionation of blood for large-scale production. At present the laboratory is working actively with the Red Cross on fractionating of plasma under various conditions and work on the irradiation of plasma for the destruction of viruses possibly present. Many of the researches conducted have yielded results of major scientific importance; and the whole story is an inspiring example of a state laboratory serving as a coördinating agency for a combined program in which the state health department, the research staff of a university, and the American Red Cross have participated.

[1] Winslow, C.-E. A. *The Laboratory in the Service of the State.* *A.J.P.H.* 6, 3:222-233 (Mar.), 1916.
[2] Massachusetts Department of Public Health. *News Letter* (Sept.), 1951, p. 159.
[3] Massachusetts Department of Public Health. *News Letter* (Nov.), 1951, p. 203.

THE DEADLINE OF SIXTY-FIVE

ONE of the striking trends of American industry during the past half-century has been the adoption of policies for the retirement and pensioning of employees at the age of 65. In 1900, 63 per cent of males over 65 were members of the labor force; by 1950, the ratio had fallen to 46 per cent. Dr. Louis I. Dublin[1] estimates that the cost of caring for unemployed elderly persons runs up to well over two billion dollars a year.

In recent years thoughtful students of the problems of aging have raised serious doubts as to the soundness of the arbitrary assumption that the man or woman on reaching the age of 65 suddenly becomes useless and his or her support a proper charge on the state or on the employing industry concerned. It is pointed out that the automatic retirement of those older persons who might be employable imposes a double burden on the community which includes not only the cost of a pension but the loss of possible productive capacity. The latter point has become of urgent importance with the defense demands which call for a much larger labor force than is likely to be available in the near future.

Furthermore, the psychologist warns us that the sentimental dream of the retired worker placidly smoking his pipe on the front porch does not fit the facts of the case. Many men and women subjected to enforced retirement suffer profound frustration from the experience.

The trouble, of course, is that the policy of automatic retirement involves two somewhat unjustifiable fallacies. One is the assumption that all men are alike. Some people are more senile at 60 than others are at 80; and so far as work is concerned, the differences are even greater. All living organisms undergo parallel processes of development and of decay. For sprinting, the point of maximum efficiency may come at the age of 20; for long-distance running, somewhat later. Even in some physical tasks calling for delicate adjustment rather than exercise of the large muscles, skills developed only by experience may best be performed by the man of 50. Full intellectual maturity may come at an even more advanced age.

In many large industries there are special tasks requiring great strength or endurance which can be performed only in the very prime of life; but there are very many more activities, in these and other industries, which by no means exceed the abilities of many men in their sixties.

Thus, we know quite clearly that automatic retirement from all gainful employment at a fixed age period has no logical justification. What, then, is the answer?

We can probably agree that physiological age rather than chronological age should be the basis of retirement and that—for a sound decision—physiological and psychological aging should be balanced against the physiological and psychological demands of a particular task. But to make such a balance we need methods of measuring such capacities and such demands which we do not now possess.

A thoughtful analysis of the problem has been made by Violet B. Turner, as editorial secretary, working under the direction of a committee of the faculty of the Graduate School of Public Health, University of Pittsburgh, of which Dr. Thomas Parran was chairman.[2] This report notes that there are now 3,000,000 persons over 65 in the labor force of the United States and, perhaps, 1,500,000 persons over 65 not employed but possibly employable. It points out that "we do not know how much the 1,500,000 could contribute to the economy, nor do we know how many of the 3,000,000 should be retired for their own good."

The report suggests that we need to know, on the one hand, to what extent the continuing employment of an aging person may involve extra cost to health and longevity by the facing of undue job stresses; and on the other hand, how far the retirement of such a worker may produce emotional damage resulting from loss of satisfaction and self-respect and to what extent the relief supposed to result may be mitigated by lack of adequate financial and spiritual resources in retirement.

The drafters of the Pittsburgh report believe that the factors involved

. . . are susceptible of investigation and analysis and that some useful criteria for determining

when it would be best to retire would emerge from appropriate research. From the standpoint of the worker, the impact of job stress upon health may be the most important of the factors. Development of age norms of physiological and psychological functions together with sensitive tests to indicate "physiological age" of the individual in terms of these norms would make it possible to maintain personnel records of the rate of deterioration and current status of individual employees in their later years. The far more subtle but equally important factors of individual satisfaction and personal needs associated with work and retirement cannot be assessed fully except through longitudinal studies of elderly persons, both those who have, and those who have not, retired. The results of such investigations might then form the basis for a preparatory program of consulting and education, to be started several years before a decision about retirement is faced.

The pediatricians and child psychologists have given us a profile of the first fifteen years of the life span which has proved of the greatest value in promoting the physiological and emotional well-being of our children. Is it not time that we gained similar knowledge of the vital processes which govern the health of human beings during the last fifteen years of that life span?

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[1] Dublin, Louis I. *The Facts of Life From Birth to Death*. New York: Macmillan, 1951. 461 pp.

[2] *Three Monographs Prepared for a Conference on Retirement of Older Workers*. Sponsored by The McGregor Fund and The National Committee on the Aging of the National Social Welfare Assembly. New York: National Social Welfare Assembly, 1790 Broadway, 1952. 113 pp.

LETTER TO THE EDITOR

To THE EDITOR,

In an editorial appearing in the February, 1952, issue of the JOURNAL entitled "The New International Sanitary Regulations," it was stated that "The United States need no longer seriously fear cholera, plague, typhus or yellow fever, which cannot develop into epidemics against our highly developed sanitary defenses." (The article as a whole indicates that the term "sanitary defenses" was not intended to include quarantine). In the same paragraph our vulnerability to smallpox was cited.

It seems hardly appropriate to include yellow fever in the list of infections against which we possess established sanitary defenses which justify either optimism or a sense of protection. While it seems unlikely this country will ever experience millions, or even many thousands, of cases of epidemic urban yellow fever, the same also might be said of smallpox.

Because of the epidemiological similarity between urban yellow fever and dengue in the Western Hemisphere, which extends far beyond the property of a common vector, a few high lights of the 1934 dengue epidemic in the Southern States might be recalled. This epidemic is believed by some to have started in Miami, in July, apparently imported from Cuba, and ultimately involved 6 or 7 Southeastern and Gulf States by the end of 1934. The actual number of cases will never be known but is believed to have been over a hundred thousand. In Florida alone, cases were reported from 70 communities in 31 counties [3] and at least 44 counties are known to have been involved in Georgia.[2] According to the city health officer of Savannah, "fully 10,000 cases occurred" in that city,[1] compared with 901 reported to the State Health Department.[2] The city health officer of Miami stated: "In the 1934 epidemic, it is safe to say, Miami

has had in the neighborhood of 15,000 cases" compared with 1,354 reported to the State Board of Health.[4] In many smaller communities the ratio of reported to actual cases was far lower.

Some 95,000 actual or potential breeding places of *Aëdes aegypti* were located in Miami, of which over 38,000 were found to have mosquitoes at the time.[3] Over a million actual or potential breeding places of the vector were found in Tampa in an 8 week period, of which over 20,000 had breeding when found and corrected.[1] Such conditions were not confined to Florida, but data for other states are not at hand.

The sanitary record of some of the communities where dengue occurred (and in some others which escaped) has improved in the intervening 18 years, but relatively few can properly claim to have a safe *Aëdes aegypti* "index." It is unlikely that yellow fever, if introduced, would be permitted to envelop hundreds of communities in a 7 state region or to persist for 4 to 5 months in a community, but this will not be due to "our highly developed sanitary defenses." The economic costs to society of the drastic domestic and foreign quarantine, and the emergency sanitation and mass immunization measures which would follow the importation of yellow fever into this country, give cause for reflection.

JOHN M. HENDERSON
Professor of Sanitary Science
Columbia University School of Public Health
New York, N. Y.

March 10, 1952

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Clearing House on Public Health Salary Information and Personnel Needs

THE NURSING SHORTAGE IN HEADLINES

The New York Times devoted approximately 15 full columns, including first page headlines, to the shortage of nurses in the nation. Harold Faber, under whose by-line the articles appeared, tackled the subject first as a nation-wide problem, citing evidences of shortages gathered at his request by *The Times* correspondents in cities throughout the United States, then focusing on the local situation, the military needs, the plans for nurse recruitment, and finally winding up on March 6, the 4th column, with suggested solutions of the problem.

The information was not entirely new to professional health workers, and a prejudiced critic might even say that the situation in public health nursing had been superficially covered, but the prominence of the articles and the succint and effective way Mr. Faber marshalled his facts and figures were impressive. It is to be hoped that his message reached those readers who are in a position to "do something about it." However, the Bolton Bill (HR 910) for federal aid to nursing education, which might have aided recruitment, failed to pass the House the following week.

As Ella Best, executive secretary of the American Nurses Association, pointed out in a letter to the editor of *The Times* on March 13:

> The public, although aware of the shortage of nurses, has not fully grasped the point that this is not just a matter for nursing and other health professions to solve. It is a problem which belongs to society as a whole.
>
> Many people, including some nurses, have been guilty of wishful thinking. They have hoped that somehow the situation would right itself automatically. Too much time and effort have been spent in treating the symptoms of the shortage rather than the underlying causes. The American Nurses' Association believes that we must attack the fundamental problems first.

The suggested solutions to the problem cover a wide area, starting with the fundamental one of making the profession more attractive to young people by improving salaries and working conditions and meeting patient needs through more effective distribution of professional services to the public. In between are the following recommendations, some already being pursued by the nursing organizations:

- To increase the number of trained practical nurses and increase the number of accredited practical nursing schools.
- To shorten the professional nursing curriculum (now 3–4 years) to 2 years.
- To increase scholarships for student nurses.
- To cut down on the drop-out rate of professional students from the schools of nursing (now about 34 per cent).
- To develop more group nursing units in hospitals
- To differentiate between professional nursing duties and other duties, reassigning the latter to appropriate personnel.
- To attract and retrain older and married nurses for part-time employment. (This may include arrangements for the care of the young married nurses' little children.)
- To ease the restrictions in transferring licenses to practise from state to state.
- To eliminate the still-existing discrimination against Negro nurses and the salary differential in the South.
- To prepare more men nurses, especially for service in mental hospitals.
- To hire more nurses' aides to be trained on the job.
- To encourage patients and patients' families to do more for themselves.

One of the most difficult situations, now affecting hundreds of hospitals both

public and private and reaching into public health nursing services also, is the sharp competition offered by the growing number of Veterans Administration hospitals, which pay top salaries to professional nurses. Community hospitals, city hospitals, and small visiting nurse services cannot touch VA salaries and other benefits. The usual salary of a staff nurse in rural areas is still $1,800 annually. "A nurse would be a fool," wrote one director, "not to cross the street and receive $3,600 for the same work under better conditions." This presents one of the typical contradictions into which we taxpayers fall: We are willing to support competitive salary scales in a government agency, but unwilling to assist the high school student with government funds to prepare to nurse, or to pay the nurses in the local hospitals where most of us will land seeking care one of these days!

It is high time we prospective patients attacked this problem at its roots.

(This article was prepared by Dorothy Deming, R.N., of the staff of the Professional Examination Service, A.P.H.A.)

PERSONNEL SHORTAGES AT END OF 1950

Joseph W. Mountin, M.D., and his associates in the Bureau of State Services of the Public Health Service prepared some personnel data for the Subcommittee on Local Health Units, meeting in San Francisco at the 79th Annual Meeting of the American Public Health Association. Although it will later be published by the U.S.P.H.S. in an analysis of services and facilities in local health departments, Dr. Mountin has generously released the material for summary in the Clearing House.

Dr. Mountin finds a total of nearly 33,000 full-time employees in local health departments at the end of 1950. Although 100 fewer units or departments reported than in 1949, the 1950 figure represents a gain of nearly 800 over the previous year.

On the other hand, for the four categories of workers—physicians, nurses, environmental sanitation workers, and clerks—for which mathematical ratios to population have been accepted, the number found in reporting units falls short by more than a third of the number needed on a minimum basis. The greatest shortage is among public health nurses, whose number needs to be nearly doubled.

Public health physicians in existing units need to be increased by nearly two-thirds to meet the minimum standards, environmental sanitation workers by nearly one-fourth, and clerks by nearly one-fifth.

Dr. Mountin finds 4 states that have suffered particularly from loss of personnel in local health departments, against 12 that have made "appreciable gains." These gains, he believes, cannot be attributed entirely to the shifting of personnel or activities from other official agencies to the health department.

Of the nearly 33,000 workers reported, slightly more than half were in city health departments, more than a third in single counties, 10 per cent in local health districts, that is, multi-county or multitown units, and a negligible 3 per cent in state districts presumably giving direct services.

DENTAL HYGIENIST TRAINING

What is apparently the first extensive survey of dental hygienist training programs has been conducted by the Council on Dental Education of the American Dental Association through a Committee on Training of Dental Hygienists. The results are published in the March Journal of the A.D.A. (Vol. 44, No. 3).

Each of the 48 states and the District of Columbia now have laws providing for the registration and licensing of dental hygienists.

The study is based on 26 dental hygiene schools and covers a three year

period. The 26 schools are located in 17 states and the District of Columbia. Of the total, 16 are dental schools with divisions or courses for dental hygienists; 10 are dental hygiene schools not a part of dental schools.

In the first year (1949–1950) of the three year reporting period, 18 schools reported; in the latter two years, 26 schools. In the three years, 1,666 students were graduated from the schools, each of which gives a two year course for dental hygienists. In the same period 2,316 students were admitted, representing fewer than half the applications for admission.

Between two-thirds and three-fourths of all first year students had completed high school only. This is the minimum requirement for all schools. Some schools, in particular those that grant a bachelor's degree on completion of the two year course, require two years of college for admission. During the three years under study, the percentage of students having high school training only, increased slightly, with a corresponding decrease of those having some college training.

In the same three years, the placement services of the schools made between 70 and 82 per cent of dental hygiene graduate placements in dental offices and between 12 and 15 per cent in public school systems. All other placements were 15 per cent in the first two years, but only 6 per cent in 1950–1951.

Since 1947 the Council on Dental Education has been studying the program necessary for the training of dental hygienists, has made pilot studies, and collected evaluation data. It is now carrying out a schedule of visiting the schools and expects to publish a list of accredited dental hygiene schools, probably some time in 1952.

Of the 26 schools, only two are in the South, one each for Negro and white students. The W. K. Kellogg Foundation has made a grant of $18,000 over a two year period to the University of Alabama for organizing an additional dental hygiene training program in this area.

THIRD CANADIAN SALARY STUDY

The second revision of the Canadian Public Health Association's salary study of 1946 is published in the February, 1952, *Canadian Journal of Public Health*. The first revision was made in 1948. The present study is based on 10 provincial and 23 city health departments and 149 local health units, as well as the National Department of Health and Welfare, and includes data on more than 4,100 professional or technical workers. For each position and each grade of position the duties and qualifications are outlined briefly.

That Canada is not unlike the United States in the need to increase public health salaries is indicated by the statement that "While in most cases there has been an over-all increase in the salaries paid in 1951 in comparison with those in 1948, the increases are not comparable with those received by other workers in Canada and do not compensate for the increased cost of living generally."

"The discouragingly short range between minimum and maximum salaries offered" is also pointed out.

More than one-fifth of 1,709 nurses reported on had maximum salary levels below the minimum recommended in the study for any grade of nurse, and only one nurse was receiving more than the minimum salary recommended for the highest level of nursing position—director of public health nursing at the provincial or large-city level.

No sanitary engineers were receiving even the minimum salary recommended for the highest grade of positions.

DENTIST SUPPLY DECREASING

An analysis by the Bureau of Economic Research and Statistics of the

American Dental Association indicates a gradual increase in the number of persons per dentist in the United States. The Bureau estimates that on July 1, 1952, there will be one dentist under 68 years of age per 1,914 of population; three years earlier there was one per 1,885. Another way of expressing this point is that an increase of more than 5 per cent in population is accompanied by an increase of less than 4 per cent in active dentists. The Bureau roughly describes "active" as under 68 years of age. Over 1,200 more dentists would have had to be graduated in the three year period than actually were, in order to maintain the ratio between dentists and population that existed in 1949.

The Bureau further points out that these calculations assume that all dental graduates become active dentists. The figures take no account of increasing military requirements for dental service. Since the military services have an established ratio of one dentist per 500 servicemen, increasing military demands will result in a decreasing supply of dentists for civilian service. This study does not include an analysis of public health dentists, a study that might well also be undertaken.

The analysis of population and number of dentists appears in the March, 1952 (Vol. 44, No. 3), *Journal of the American Dental Association*, 222 E. Superior St., Chicago 11.

1952 MICHIGAN MUNICIPAL SALARIES

The Michigan Municipal League finds that in 102 Michigan cities municipal pay scales during 1951 for 108 different types of positions rose an over-all average of $200. The annual study made by the Municipal Personnel Service includes 9 different positions in the health service, excluding hospital positions. The report gives details by area and by size of city. Personnel practices with regard to hours of work, overtime pay, and paid holidays are also summarized. Supplements during the year will show changes in pay, including fringe benefits. Michigan Municipal League, 205 S. State St., Ann Arbor, Mich. $3 including all supplements.

A PERMANENT TRAINING DIVISION

The Massachusetts Department of Public Health has made a permanent position of its "training director," a position heretofore financed out of a five year training grant from the W. K. Kellogg Foundation. Leon A. Bradley, Ph.D., who has been director of the Training Division since its organization late in 1950, continues in that position. Since November, 1950, a total of 310 public health workers have been trained in five specialties—medical health administration, medical social work, public health nursing, health education, and environmental sanitation. As a result of the movement for local health unions, it is anticipated that there will be a growing need for trained personnel in the state.

COÖPERATION IN TRAINING

The New York and Pennsylvania State Health Departments are coöperating in the training of six sanitary inspectors, who are being prepared for possible assignment in Pennsylvania's first county health department, now being organized. The six trainees, following their basic training in sanitation at the U. S. Public Health Service training center in Pittsburgh, have been assigned to various county health departments in New York State, where they will observe the operation of sanitation units in local health departments. The training in New York State is being carried on through the Department's Office of Professional Training.

Credit Lines

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

A NEW TOOL FOR AN OLD NEED

Your Neighbor's Health Is Your Business fills a long felt need. It's a good down-to-earth pamphlet telling what a health department does—or better yet, what it can do. Sponsored by the National Health Council and published by the Public Affairs Committee, it is written by Albert Q. Maisel, writer on health and related subjects for popular magazines.

This pamphlet doesn't stop with describing a department, but also suggests how individuals and groups can get one started for their community. "It takes only one person to get the ball rolling." One way to get started is to set up a health council, or committee, of interested people from various groups. Begin by getting the doctor, the nurse, the housewife, the farmer, the businessman, the worker, the school teacher, and others together to talk over community health problems. Before long they will have a council and a plan for a health department.

"Such a council, mobilizing all the forces in a community willing to work for better health services, is the ideal means by which people can get for themselves and their neighbors better health services. Hundreds have been formed in the last few years. Scores have already won tremendous health gains for their communities."

The pamphlet is easy to read, easy to look at, and packs a lot of information into its 32 pages. It should prove a big help to those who are trying to mobilize public support for a new health department—or indeed for a better one.

National Health Council, 1790 Broadway, New York 19; or Public Affairs Pamphlets, 22 E. 38th St., New York 16. 25¢, reductions on quantity orders.

PUBLIC HEALTH MILESTONES

In Rhode Island has been developed what the *Providence Sunday Journal* calls "a milestone in the public health history of the nation." The Rhode Island Quality Milk Association, according to this *Journal*, represents "the first time that all groups in the state interested in milk—consumers, producers, dealers, and public health officials—have banded together in a community effort to obtain not only good milk but milk of a superior quality."

Dealers and producers made the Association and its service possible by subscribing to its program. It has a laboratory, reported to be unique, concerned chiefly with consumers, with a function to see that milk "not only meets the minimum standards of the law, but goes beyond that to superiority." The director of the laboratory operates independently, without regard to official, dealer, or producer.

The 12 member board is headed by its only woman member, who represents the state P. T. A. Congress. The *Journal* concludes, "The association . . . stands out as a symbol of community cooperation. It proves . . . that people of diverse backgrounds and interest can get together and work in harmony, all for the greater common good."

A bit of history fills in the background

of this development. In 1949 the *Providence Journal* undertook to determine the quality of the milk supplied to families in the Providence area. It published the results of laboratory examinations of milk samples made by its private milk expert, and the expert's conclusion that much of the milk sold to consumers was below standard. The *Journal* was then involved in a libel suit by the dealers, which it lost. But the community was aroused nevertheless. Perhaps the *Providence Journal* can be said to have had the last word after all, in that its crusade was certainly one factor in the final development of the Quality Milk Association.

WEIGHT REDUCTION FILM

Weight Reduction Through Diet is a new 16 mm. documentary Kodachrome film with the theme that safe—and effective—weight reduction takes time. The film was produced by the National Dairy Council in coöperation with Michigan State College. The film is based upon a weight reduction study supported by the Dairy Council that has been in progress at Michigan State College for several years under the direction of the head of the Department of Foods and Nutrition, Margaret A. Ohlson, and the director of health services, Charles F. Holland, M.D. A reprint of the study reported in the *Journal of the American Dietetic Association* is also available. Requests for the film on a preview or sale basis or for the reprint, or for additional information about the film or the research study, should be made to National Dairy Council, 111 N. Canal St., Chicago 6.

KIWANIS FUNDS FOR SPASTIC RESEARCH

A five year $75,000 research program into the cause, prevention, and treatment of spastic paralysis is planned by the Illinois and Eastern Iowa district of Kiwanis International. The funds, when pledged by Kiwanis members, will be administered by a Foundation for Research for Spastic Paralysis. The money, $15,000 annually, will be used to maintain a specially trained research physician in a medical school in the Chicago area. The program, the culmination of a 10 year interest of this Kiwanis district in the "forgotten child," was voted at a recent meeting of the trustees of the district.

A NEW BULLETIN

Headlines is the title of a new monthly bulletin which the Syracuse (N.Y.) Health Department initiated with the January-February issue of 1952. It's a bright little pamphlet, with imaginative though amateur line drawings. This first issue gives a brief outline of some of the main activities of the department. Its cover page is a shield with four symbols—public health, medicine, laboratory, and nursing. C. A. Sargent, M.D., is the health officer.

UTAH'S FIRST LOCAL HEALTH DEPARTMENT

At the beginning of 1952, a full-time health department was organized in Utah County. This city-county health department was set up according to the state's 1945 law permitting county, city-county, or multiple county health departments. Not only does the new county department consolidate the scattered services of Provo, the only sizable city, and several small cities and towns, but it will also supervise the health work of the three school districts in the county. It will thus serve a population of about 82,000 persons.

Your Health of the Utah State Department of Health reports that the County Planning Commission initiated and helped to carry out the consolidation. "Utah County," it says, "is leading out in a move, long advocated by the State Health Department, to decentralize public health services and accept responsibility for them on a county

basis." Heretofore communities have been served through state health districts.

The new health officer, E. M. Smith, M.D., also gives credit to health councils throughout the county which "have done a great deal to stimulate local responsibility for their problems and a cooperative working relationship with other county commissioners."

The law under which Utah County was organized provides for a county board of health appointed by the county commissioners. One member must be a physician, but not more than two may be physicians. A city-county or district board of health includes seven members.

ANNUAL REPORTS

The Rochester-Olmstead County *Health Unit Annual Report—1951* is a double page spread appearing originally in the community's daily newspaper, the *Rochester Post-Bulletin*. It's a straightforward report of the organization and activities of this health unit, which has the services of the Mayo Clinic staff in addition to the regular services of the departmental staff. Board of Education health activities are centered in the health unit. The report is illustrated with photographs of typical activities. Viktor Wilson, M.D., is the health officer. Rochester, Minn.

Russell Sage Foundation, Annual Report 1950–1951 in its brief 40 pages tells a good deal about current trends in medicine and public health. The Foundation, for example, supports a two year study of psychiatry, especially the social functions it performs. It is supporting studies in interpersonal relationships in medical and nursing care, has carried on a counseling service in nursing education that has now been taken over by the National League of Nursing Education. Social analysis of public health cases is being used to give students of the Harvard School of Public Health some acquaintance with the social sciences. Supporting a health service residency for social scientists at Yale University, developing health services for Spanish-American patients in Colorado, studying ethnic factors in mental stress, a manual for premarital counseling, a handbook on the application of social science to housing design —these are but a few of the projects that touch public health but have hitherto been little cultivated. Russell Sage Foundation, 505 Park Ave., New York 22.

Research and Service in Multiple Sclerosis is the first annual report (1951) of the five year old National Multiple Sclerosis Society. The report says that "the primary objective of the Society has always been the promotion of research"—both basic and clinical. Support of research accounted for 47 per cent of its expenditures during the five years. It has supported 16 projects in 13 institutions of the United States and one each in Canada and England. 270 Park Ave., New York 17.

ANNUAL REPORT OF THE FEDERAL SECURITY AGENCY: *Public Health Service.*

In fewer than 75 pages are reported Service activities that stretch from almost the smallest hamlet in the United States to the Chulalongkorn Hospital in Thailand.

The lowest death rate in the nation's history, 9.6, is reported; likewise the lowest recorded infant and maternal mortality. Advances toward longer and healthier American lives are credited to medical research, expanded hospital facilities, and improved local health services. In all of these the Service has had a part. With respect to local health services, the report points out that there are 40,000,000 Americans still without the protection of full-time local health services.

The vast scope of research carried on

in the National Institutes of Health, emergency health services, and the significant part that the Service plays in world health missions are other items in this report of varied activities.

Massachusetts "Airborne", An Aerial Look at 351 Community Fences takes its cue from the air age. The 1951 annual report of the Massachusetts Community Organization Service, which is the state community chest and council, is given over mostly to describing, as an air trip, a study being made of what might be the health and welfare areas of the state, instead of the 351 towns and the jumble of other jurisdictions. The study looks toward blueprinting areas for community organization. 3 Joy St., Boston 8, Mass.

WORTH ACQUIRING

Glaucoma is described as "the disease that can rob you of sight . . . without warning . . . without pain." In an 8 page booklet the National Society for the Prevention of Blindness tells the simple facts of this eye disease. Because it can usually be checked if caught early and because it is difficult to detect early, a thorough eye examination is recommended at least biennially for everyone 40 years of age or over. 1790 Broadway, New York 19, 5¢.

Feelings Are Facts, by Margaret M. Heaton, is the latest in a series of intergroup education pamphlets being distributed by the National Conference of Christians and Jews. The importance to mental hygiene, particularly in the school room, of understanding feelings, what gives rise to them, how they are to be dealt with, is outlined for the teacher. The pamphlet was first prepared for the San Francisco Board of Education for its intergroup education program. With the Board's permission it has now been republished for wider distribution by the National Conference of Christians and Jews, 381 Fourth Ave., New York 16, 25¢.

The Sun and You includes factual data (approved by the Public Health Service) suitable for the summer days not far away. A small twice-folded leaflet, it gives the simple information about the effect of sun in relation to the sensitivity of various skins. There are helpful hints on sunburn and sun bathing. It also recommends an annual medical checkup before the vacation and sun-tanning period. Free from Skol Research Institute, 420 Lexington Ave., New York 17.

Home Safety Program Kit contains the materials for a community-wide program for either the official agency or the volunteer organization. A revision of an earlier kit, its general plan follows the recommendations of the Home Safety Conference of the National Safety Council. The American Public Health Association is among the numerous agencies represented on this Conference.

This new blueprint for community safety action includes a new checklist—Are You Safety Conscious?; suggested programs for clubs, local health departments, and others; a wealth of accident statistics; sample radio program and newspaper release; a list of recommended films; suggestions for exhibits; a one act playlet, "Going, Going, Gone!" and several posters. The Council would seem to have thought of everything to help the safety-minded community carry out an effective program. Home Safety Division, National Safety Council, 425 No. Michigan Ave., Chicago 11.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Social Aspects of Illness — *By Carol H. Cooley. Philadelphia and London: Saunders,* 1951. x + 305 pp. Price, $3.25.

Leaders of the nursing profession have recognized that the education of the nurse must give her a view and an understanding of the patient as a person living and acting in a definite social and psychological environment. Through the establishment of this basic awareness and its translation into the daily tasks of the nurse, she will be better equipped to provide the total nursing care needed by the patient. The purpose of this text is to contribute to this vital aspect of nursing education.

After indicating the need for studying the social aspects of illness, the author discusses in successive chapters the meaning of illness to the individual, the consequences of illness for the patient, the family and community, how social problems are discovered and studied, and how such problems may be handled preventively and therapeutically. Having established the general framework, the author in subsequent chapters deals with the special problems of the ill child, medical and surgical conditions, the social aspects of maternity care, social problems of communicable diseases and skin conditions, and finally the problems associated with visual, auditory, and speech defects. At the end of each chapter there is a series of questions for discussion and selected readings for students. The book also contains a suggested bibliography for instructors.

Taken as a whole, the book fulfills its purpose well. While the author is a social worker, and there is considerable emphasis on the responsibility of the social worker for social treatment, the team approach is stressed throughout. Furthermore, the text is pitched on the level of the student nurse, and practical illustrations are employed to underscore the discussion of specific principles.

Nevertheless, despite the over-all approval which the text merits, certain specific defects should be noted. For one thing, there is repeated evidence of fuzzy thinking, particularly with respect to the concept "social." In part, this arises from the fact that nowhere does the author present a systematic analysis of this basic idea. At one point, it is presented as meaning socio-psychological relationships, and at another "social" becomes poor housing, overcrowding, poor nutrition, and so on. While it is evident that the author understands the complexity of the concept, the several levels involved in the term "social" and their interrelationships are never clearly explained. Similarly, the author misuses the term "race," referring to "racial customs" and "racial food habits." There are no such things. Race is a concept connected with physical differences in human beings, and there is no evidence that such differences have anything to do with customs and habits, which arise rather out of cultural conditions, social background, and economic status. Perhaps these changes can be made in a later edition, for they would improve an otherwise commendable text.

GEORGE ROSEN

Syphilis—*By Richard S. Weiss and Herbert L. Joseph. New York: Thomas Nelson,* 1951. 180 pp. Price, $5.00.

This is a condensed text based on the section on syphilis in *Nelson's Loose Leaf Medicine* and intended for the use of the general practitioner, Armed

Forces medical officers, and medical students.

The format of the presentation follows the accepted pattern in the discussion of the clinical aspects of the various stages of syphilis. Many excellent illustrations in black and white are included.

The weakest portions of the discussion are the chapters on treatment. Except for historical interest, the text on arsenicals and heavy metals could well have been drastically curtailed, thereby materially shortening the size and increasing the usefulness of the book. Insufficient emphasis is given to currently accepted penicillin preparations and to schedules used for syphilis therapy in all stages.

The information contained in the chapters on syphilis and marriage is also at considerable variance with the present-day accepted beliefs.

The chapter on public health and control is fairly well presented for the short space allotted to it. It would have been more factual and in line with current experience throughout the country if the results of public health control methods had been indicated as they exist today.

While this book presents the subject in a concise form, the numerous superfluous discussions, especially of therapeutic measures, and some of the inaccuracies mentioned make this book unsuitable for use by the general practitioner, members of the Armed Forces, and medical students.

ADOLPH JACOBY

The Battle for Mental Health—*By James Clark Moloney. New York: Philosophical Library,* 1952. 105 pp. Price, $3.50.

With statistics, this book gives basis for concern about the problems of mental health in this country. The importance of impressions in the earliest days of infancy are emphasized and the dangers to a child's future emotional security in the effect on him of tensions in the mother and frustrations unavoidable because of current hospital procedures. This leads to a discussion of the aims and methods of the Cornelian Corner and of the resistances encountered in attempts to establish it more widely.

This reviewer feels some disappointment that the positive approach indicated in the preface was not maintained through the book. For readers with some psychoanalytic background and interest in anthropology, there is much food for thought. Already troubled mothers, without such background, should not be given this book without other definite help in easing their tensions. The treatment of the personality make-up of members of nursing and medical staffs in obstetrical departments is hardly conducive to their coöperation in changing methods.

Undoubtedly the author is deeply concerned for the welfare of the coming generations, but the keynote of the book is heard more clearly in the word *Battle* than in *Battle for Mental Health.*

MARGARET T. ROSS

Growing in the Older Years—*Edited by Wilma Donahue and Clark Tibbitts, with a Foreword by Everett J. Soop. Ann Arbor: University of Michigan Press,* 1951. 204 pp. Price, $2.50.

This helpful volume completes the series of the first two volumes of the Older Years Trilogy—*Living Through the Older Years* and *Planning the Older Years.* It maintains the high standards of content and format set by previous volumes. Its thirteen contributors have set forth clearly and concisely the salient factors which enter into the aging process and have suggested ways and means whereby they may be met with sociomedical and educational techniques at our command. The difficulties and obstructions to solving the problems of the older years are not glossed over or sidetracked but are met with scientific and humanistic consideration, and prac-

tical means are offered for their solution.

One of the contributors, Dr. William B. Kountz, states that "Medical knowledge at this time, as far as geriatrics is concerned, can be compared to the knowledge of pediatrics about the year 1850," and Dr. Joseph W. Mountin, writing on Community Health Services for Older People, affirms, "We are witnessing what, in many respects, is the counterpart of the child health movement, which began to take definite form at the turn of the century. Those who are interested in promoting health programs for older people might very well study the movement for child health in this country over the past half century."

The opening chapter on National Aspects of an Aging Population by Clark Tibbitts well sets the pace for what follows, and the concluding contribution on A Mid-Century Forecast for the Aging by Wilma Donahue indicates our future course.

In this new field of public health and social welfare it would be well for every forward looking library to possess this Trilogy on the Older Years and indicate to its readers the wealth of material it contains. RICHARD ARTHUR BOLT

Detroit's Health in 1950—*Detroit Department of Health Annual Report, 1950. Vol. XXXV, No. 1. Detroit, Mich.: City Department of Health,* 1951. 81 pp.

This attractive volume will be interesting both to those who study reports, as reflecting administrative methods and facts, and to those who appreciate good reports in terms of their attractiveness and readableness. This record of Detroit's 250th year presents very simply the work of the Department. The organization chart carries a distribution of the budget and the number of employees in an interesting manner. The budget involves a total of $14.4 million. The estimated population in 1950 was 1.846 million. The statistical record is attractively presented by census areas, the essential data being filled in on an outline map. Critical rates like infant mortality at 26.8 and maternal mortality at 0.6 are very favorable. The tuberculosis death rate, however, at 30.6 remains higher than some other comparable areas.

The illustrations, which are uncaptioned, are excellent. The text of the report is concise and it reflects special studies, such as a continuing evaluation of drugs in the treatment of syphilis. Chloromycetin, for example, in the treatment of gonorrhea in men is regarded as highly effective, but less so than penicillin. Health workers of all categories are indebted to Dr. Molner and his associates for an outstanding report well presented.

REGINALD M. ATWATER

Children Who Hate—*By Fritz Redl and David Wineman. Glencoe, Ill.: The Free Press,* 1951. 250 pp. Price, $3.50.

The authors, who have had a rich experience with delinquent children, have chosen to study behavioral pathology in an attempt to gain new insight into the specific functions of the normal ego. They set up a research project in which a carefully indoctrinated staff lived for a year in the same home with five pre-adolescent delinquent boys. On a twenty-four hour a day basis, they were able to keep complete records of what happened under what circumstances.

The book deals with 22 specific instances of the breakdown of behavioral controls, 34 "delinquent defenses," and 6 "sicknesses of the conscience." Case material is well chosen to illustrate and clarify the observations made and the analysis of them is related not only to the pathology but also to the implications they have for the development of more normal ego strengths. Conclusions about methods of treatment are promised in another book, since it was with diffi-

culty and the utmost skill that diagnostic material was selected for the limits of this one.

While the book's greatest contribution will be its wealth of new material for professional use, the material is so clearly presented that it should prove helpful to any one interested in children. The authors' style and fascinating choice of terminology sustain the reader's interest throughout.

AMY W. GREENE

Finlay—*By Cesar Rodriguez Expósito. Havana, Cuba: Editorial Libreria Selecta,* 1951. 338 pp. Price, $5.00.

Someone has said that Finlay's triumph was the triumph of perseverance. A special set of circumstances conspired during his lifetime to make this so. The startling fact is that an entirely different group of factors also conspired to cheat him of his triumph, which was only accorded to him in the last few years of his life, and to credit it for half a century to those who only took advantage of his ideas, his teaching, his work, and his research.

Finlay labored for more than twenty years to achieve success in his investigations. The admirers of this Cuban scientist have labored for fifty years to establish the credit which is his due. This they have finally achieved; now, without fear of showing ignorance or bad faith it is possible to credit Finlay's work and his monumental discovery. A crusade lasting half a century has been required to achieve this victory. Worthy crusaders have included the Ateneo de la Habana, the Academy of History, the National University, and other cultural institutions. I mention these because I want to form with them a roll of honor to dedicate to the humblest of them all, the Commercial Employees Association of Havana, originator of the Finlay-Delgado Prize and on whose initiative was written the book now under review.

It would be impossible to refrain from commenting on this episode, which may appear to be trivial but which reveals a spirit we can only hope will be emulated throughout Ibero-America.

The crusade to vindicate Finlay has found a leader worthy of it in Rodriguez Expósito, author of this epoch-making book on the life of Finlay. Aside from his indisputable merits as a historian and biographer, he has achieved the complete and definitive vindication of the hero. The documentation is exhaustive and conclusive. Nothing has remained in the shadows. This was absolutely necessary in order that no one, anywhere, could entertain the slightest doubt concerning what is accepted today as incontrovertible fact—that the discovery of the transmission of yellow fever by mosquitoes was the work of two outstanding men working in close coöperation, Finlay and Delgado.

And now comes what was to us the most interesting fact, because until now we had thought that Delgado was, at best, a great friend and collaborator of Finlay; but we did not know that he shared in the glory of the discovery. This is clearly shown in the writings and speeches of Finlay unearthed by Rodriguez Expósito, with the extraordinary result that the participation of Delgado does not detract in the slightest from the glory that is Finlay's. The glory of the discovery is so great that it continues to be immense even when it must be shared.

The glory increases still further if we realize that Delgado never made any claims and that Finlay shared the credit with him in a completely spontaneous fashion. Read Rodriguez Expósito's book and you will be an astonished witness to such an unheard of occurrence.

At the beginning, I stated that Finlay's triumph was the triumph of perseverance. To round out to the fullest Finlay's marvelous life one could add to that, as shown by the historical research

contained in this noteworthy book, the triumph of generosity.

When Ross asked for data on his work, because he wished to propose him for the Nobel Prize, Finlay wrote him a letter (November 7, 1905) in which he states, among other things: "Whatever may be the objections put forward against the results obtained by my friend Dr. Claudio Delgado and me in our experiments. . . ." When the First National Medical Congress met in Havana in 1905, it devoted its first session to homage to Finlay. Finlay was too deeply moved to speak and he asked Dr. Coronado to do it in his name, but not even then did he forget Delgado, "with whom I wish to share the cordial applause of the Congress," as he asked his spokesman to state. Finally, when the Academy of Sciences of Havana (December 3, 1908) held a solemn session in his honor, Finlay associated Delgado with it, proclaiming his debt to his friendship and collaboration and adding that he was "my unforgettable companion with whom I wish to share the great satisfaction I now enjoy."

On these occasions Delgado was not even present; he had retired to his native land (Asturias) and from Gijon (Spain) he wrote his friend congratulating him on his triumphs.

Such an example of mutual nobility and generosity is undoubtedly rare in history. If only because of this, history would do well to link their names forever—Finlay and Delgado—with one of the most brilliant discoveries in epidemiology: the transmission of yellow fever by mosquitoes.

LUIS E. NÁJERA

Conference on Problems of Aging. ***Transactions of the Twelfth Conference, February 6–7, 1950, Sponsored by the Josiah Macy, Jr. Foundation—Edited by Nathan W. Shock. New York: Josiah Macy, Jr. Foundation,*** 1951. 215 pp. Price, $3.50.

This is a verbatim compilation of professional discussions of problems of aging at the psychological-social level. It will rate high as a composite of authoritative thinking, as revealed in a conference marked by informality.

The Transactions are assembled under the five subject matter headings used by the Conference, together with the remarks which opened discussion as each topic was taken up, as follows: (1) "Intrapersonal Aspects of Gerontology," Laurence K. Frank, New York, N. Y.; "Interpersonal Aspects of Gerontology," Robert J. Havighurst, Department of Education, Committee on Human Development, University of Chicago; "The Relation of Gerontology to Clinical Medicine," Edward J. Stieglitz, Washington, D. C..; "Problems of Aging: Psychopathological Aspects," William Malamud, Department of Psychiatry, Boston University Medical School; "Economic Aspects of Gerontology," Charles V. Kidd, Federal Security Agency, National Institutes of Health.

In the nature of forewords are the remarks on the Conference program by Dr. Frank Fremont-Smith, Medical Director, Josiah Macy, Jr. Foundation, and the introductory remarks to the Conference group by the group chairman, Dr. Roy G. Hoskins, Memorial Foundation for Neuro-Endocrine Research, Harvard Medical School, Boston, Mass.

Both as to method and spirit, the following from the remarks of Dr. Fremont-Smith are fairly representative of the Conference throughout:

> We subscribe to the basic philosophy that nature is all of one piece. From star dust to United Nations, from the energy within the nucleus of the atom to the energy within ourselves which motivates our behavior, nature knows no boundaries, and we cannot further an understanding of nature and of ourselves as part of nature if we accept the departmental isolation which has developed within universities. Therefore, our whole conference program is focused upon bringing together groups of scientists with a variety

of technical backgrounds who are concerned with the common problem, so that they may exchange ideas, get new ideas, correct ideas, find ways and means of spontaneous cooperation and of communication across boundaries which are artificially and often rather rigidly maintained in our universities.

In this word-for-word account of a conference so planned and so conducted, the informality of give and take—the "freewheeling," as one of the participants characterized the nature of the discussions—makes fascinating as well as provocative reading. One point of view, which, it may occur to the reader, the historian of the future may see as a marker of departure in gerontological research, is brought into sharp focus by Dr. Raymond G. Kuhlen of the Department of Psychology, School of Education, Syracuse University. In the discussion of intrapersonal aspects of gerontology he says: "As a matter of fact, for most psychological functions the years between 20 and 60 have been even less explored than the later years. The point I wish to make is that it is very unwise to limit gerontological research to the later years."

A book of wide range and lively exchange in areas relevant to a grave and growing national problem.

CLARK TIBBITTS

Intergovernmental Relations in Public Health (as Observed in Minnesota)—*By Laurence Wyatt. Number 4 in a Series of Research Monographs Edited by William Anderson and Edward W. Weidner. Minneapolis: University of Minnesota Press,* 1951. 212 pp. Price, $3.50.

The first seven chapters of this planographed monograph are concerned with a critical analysis of the organization of federal health services. The organization of the Public Health Service, the Children's Bureau, and other federal agencies is presented in detail, and an analysis is made of the grant-in-aid program and its administration, particularly as it affects Minnesota. Chapters 8 and 9 are concerned exclusively with the administration of public health in Minnesota, both on state and local levels. The tenth chapter is concerned with interstate and interlocal relations of Minnesota.

The appendix contains a summary of the questionnaires sent to 37 city health officers and 37 village health officers in January, 1948.

The author presents a restricted definition of public health and a policy of "federal competence" in health affairs. This philosophy is disturbing, particularly since the Public Health Service has not been subscribing to a broader exercise of its authority as defined in this doctrine of "federal competence."

The monograph should be useful to students of public health, especially in Minnesota, since it presents in detail the administrative relations of the grant-in-aid programs. V. A. GETTING

Maternal Nutrition and Child Health, An Interpretative Review—*By Kirsten Utheim Toverud, Genevieve Stearns, and Icie G. Macy. Washington, D. C.: National Research Council, National Academy of Sciences,* 1950. Bull. No. 123. 174 pp. Price, $2.00.

This bulletin was prepared for the Committee on Maternal and Child Feeding of the Food and Nutrition Board, National Research Council.

It is a report of a "comprehensive world-wide survey of our present knowledge of the nutrition of the mother in relation to the health and vigor of her infant at all stages of his development."

Dr. Hoobler's committee is to be congratulated for its wisdom in having selected the late Dr. Toverud as the best qualified person to make such a survey.

The report is divided into three sections—I, Maternal and Infant Mortality; II, Specific Nutritional Factors in Maternal and Infant Health; and III,

Prematernal, Prenatal, and Postnatal Care. There are 1,008 references in the bibliography.

The material should prove helpful to obstetricians and pediatricians, as well as all other workers concerned with problems of maternal and child growth and development.

Section III should be must reading for all public health workers in this field. This section includes material on the following: Prematernal Care, Physiological Growth During the Maternal Reproductive Cycle, Prenatal Care, Lactation, and Future Program.

Careful study of the contents of this bulletin as preparation for program planning in this field should fulfill the hopes of the Committee and of Dr. Toverud as she expressed them in the closing sentence of her preface, "In this publication we have assembled significant material indicating the progress which has been made in reducing maternal and infant mortality and morbidity and profitable directions for further experimentation, with the hope that this compilation will stimulate and facilitate application of knowledge now available." ALICE H. SMITH

Texas Nurses in Review. A Survey of Nursing Sources and Resources in the State of Texas. *Foundation for Research and Development in Health Activities. Houston, Tex.: The Foundation, Suite 209, Hermann Professional Building,* 1951. 92 pp.

This is a detailed and impressive report of a survey on the nursing sources and resources in Texas. It was made by the Foundation for Research and Development in Health Activities under the direction of Ross Garrett and Associates, Houston, Tex., and sponsored by the Board of Nurse Examiners of Texas.

The survey was made for the purpose of providing "basic information from which dynamic action may crystallize, by those in authority and by those providing leadership for Texas destiny." Although sponsored by the Board of Nurse Examiners, there is no reference to participation by any other representative groups in nursing education which would be expected to provide leadership in taking action.

The data on nursing were obtained primarily from questionnaires sent out at the time of reregistration. A great deal of interesting information is recorded and the conclusion reached is that a crisis in nursing impends in Texas. Not only are there too few nurses to meet the need, but there is also an unequal distribution of them. The report also shows an increase in the number of hospital beds within the last ten years and a decrease in the number of students enrolled in schools of nursing during the same period. The present education facilities are reviewed and it is concluded that there is need for more recruits in nursing, more teaching facilities, and more scholarships.

An important point is brought out clearly, namely, the need for hospital administrators planning expansion programs and nurse educators developing nursing education programs to plan together for the purpose of providing the services needed by the public to avert a nurse power crisis.

The report is easy to read and to understand. A unique feature is the size of its pages—which seems to go with the size of Texas. The print is large and the wide margins allow for headings which stand out clearly. The size and generous use of color give emphasis to important facts. Charts, graphs, and maps are used in abundance to report data and to make comparisons. The information contained in this report is, of course, of use to only the people of Texas who must take action. The method and the presentation of the material may be of interest to people in other states. MARY E. PARKER

Antibiotics Number. Journal of the History of Medicine and Allied Sciences. Vol. VI, No. 3, Summer, 1951. *New Haven, Conn.: Yale University, Department of History of Medicine,* 1951. Pp. 279 through 437. Price, $2.50.

Dr. George Rosen points out in the preface to this special number that, a decade having elapsed since the antibiotics first began to figure prominently on the medical scene, it seems fitting to look back at the decade that has passed, to see what has been accomplished and how it all happened. Characteristic of this period have been the extraordinary expansion of knowledge concerning antibiotics and the breath-taking rapidity with which this knowledge has been applied. The aim of this volume is twofold, first to present an important phase of contemporary medical history, and second to have this story told if possible by those who made it.

There is a fascinating introduction by Dr. John F. Fulton, followed by a paper, "Antibiosis from Pasteur to Fleming," by Jules Brunel of Montreal. It will startle many readers to discover that antibiosis and, indeed, the discovery of penicillin antedated Fleming in 1929 by many years.

Other papers include "The Work on Penicillin at Oxford," by Florey and Abraham; "Streptomycin," by Waksman; "Pharmacology of Antibiotics," by Henry Welch.

This is an exceedingly provocative number of the *Journal of the History of Medicine* and deserves to be read by all those who use the antibiotics in public health.

REGINALD M. ATWATER

The Care of the Ageing and Chronic Sick—*By A. P. Thomson, C. R. Lowe, and Thomas McKeown. Published for the Birmingham Regional Hospital Board by E. & S. Livingstone, Ltd., Edinburgh & London,* 1951. 133 pp.

This report is another example of the favorable results from the British habit of attacking directly serious phases of the problem of aging and reporting findings with a simplicity that is lucid enough to give them meaning for the lay reader without sacrificing technical soundness for the professional. The major paper in the collection is a summary by Dr. Thomson. In it he outlines studies under the auspices of the Planning Committee of the Birmingham Regional Hospital Board; appraises the factual data, which are skillfully presented in orderly, detailed fashion by his associates in the succeeding papers; and presents such conclusions as can be drawn in a manner worthy of the physician, humanist, and philosopher he proves himself to be.

Any reader familiar with this problem in the United States will feel very much at home in the situation studied, for it is typical of those in this country. The reader will also "ditto" the conclusion that there is a general lack of recognition of the tremendous implications of the problem for individuals, the medical profession, hospital administrators, and the whole community. Although little new is added to present knowledge, the material does substantiate much that is known and intensifies conviction as to the urgency of informed action. The emphasis on the social aspect of this medical problem supports the growing body of opinion in this country that provisions for the care of the aging and chronically sick will approach adequacy only if made on an institutional and non-institutional, or home care, basis.

OLLIE A. RANDALL

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ADOPTION PRINCIPLES AND SERVICES. Pamphlet of seven articles selected from 1947–1952 issues of Social Casework. New York: Family Service Association of America, 1952. 42 pp. Price, $.85.

AN ADVANCE TO SOCIAL MEDICINE. René Sand. New York: Staples Press, 1952. 629 pp. Price, $8.50.

BAKTERIOLOGISCHE FLEISCHBESCHAU. Richard Standfuss (4th ed. in German). Berlin: Paul Parley, 1952. 96 pp.

CANCER ILLNESS AMONG RESIDENTS OF PITTSBURGH, PA. Bethesda, Md.: Public Health Service, National Cancer Institute, 1951. 46 pp.

CARDIOLOGY FOR NURSES, HANDBOOK OF. Walter Modell. New York: Springer Publishing, 1952. 236 pp. Price, $3.50.

CENTRAL COUNCIL FOR HEALTH EDUCATION INFORMATION DIGEST, January 1952. London: Central Council for Health Education, Tavistock House, Tavistock Square, W.C. 1, 1952. 48 pp. Price, 1/6.

CEREBRAL MECHANISMS IN BEHAVIOR. Edited by Lloyd A. Jefress. New York: John Wiley, 1951. 300 pp. Price, $6.50.

CURRENT THERAPY, 1952. Edited by Howard F. Conn. Philadelphia: Saunders, 1952. 849 pp. Price, $11.00.

EDUCATION AND NATIONAL SECURITY. Washington, D. C.: National Educational Association, 1951. 60 pp. Price, $.50.

THE HAND IN PSYCHOLOGICAL DIAGNOSIS. Charlotte Wolff. New York: Philosophical Press, 1952. 214 pp. Price, $7.50.

HEATING VENTILATING AIR CONDITIONING GUIDE 1952. Vol. 30. New York: American Society of Heating and Ventilating Engineers, 1952. 1496 pp. Price, $7.50.

THE HUMAN BLOOD GROUPS. P. H. Andresen. Springfield, Ill.: Charles C Thomas, 1952. 114 pp. Price, $3.75.

HUMAN FACTORS IN MANAGEMENT. Schuyler Dean Hoslett (rev. ed.). New York: Harper, 1951. 324 pp. Price, $4.00.

MANUAL FOR MEDICAL RECORDS LIBRARIANS. Edna K. Huffman (3rd ed.). Chicago: Physicians' Record, 1952. 466 pp. Price, $7.50.

METABOLIC INTERRELATIONS. TRANSACTIONS OF THE THIRD CONFERENCE, JANUARY 8–9, 1951. Edward C. Reifenstein, Jr. New York: Josiah Macy, Jr. Foundation, 1951. 294 pp. Price, $4.00.

MILITARY MEDICAL MANUAL (7th ed.). Harrisburg, Pa.: Military Service Publishing, 1952. 746 pp. Price, $5.75.

MUSCULOSKELETAL SYSTEM. A SYMPOSIUM. Edited by Mahlon Ashford. New York: Macmillan, 1952. 368 pp. Price, $6.50.

NATIONAL FORMULARY 1952. British Medical Association and The Pharmaceutical Society for Great Britain. London.: The Pharmaceutical Press, 1952. 181 pp. Price, 4s. 6d.; interleaved, 7s. 6d.

NEOMYCIN. LITERATURE REVIEW AND OTHER PERTINENT DATA. New York: Heyden Chemical, 1952. 59 pp.

THE ONLY WAR WE SEEK. Arthur Goodfriend. Washington, D. C.: Americans for Democratic Action, 1951. 128 pp. Price, $1.00.

PENNSYLVANIA BUILDING AND ZONING LAWS—AN ALLEGHENY COUNTY APPRAISAL. David W. Craig. Pittsburgh: Allegheny Conference on Community Development, 1951. 386 pp.

PRACTICAL PROCEDURES. Edited by Sir H. Ogilvie and William A. R. Thomson. London: Eyre & Spottiswoode, 1952. 357 pp. Price, 25s. net.

PREVENTIVE MEDICINE AND PUBLIC HEALTH. Wilson G. Smillie (2nd ed.). New York: Macmillan, 1952. 590 pp. Price, $7.50.

RX FOR MEDICAL WRITING. Edwin P. Jordan and Willard C. Shepard. Philadelphia: Saunders, 1952. 103 pp. Price, $2.50.

SANITATION FOR THE FOOD-PRESERVATION INDUSTRIES. Prepared by the Association of Food Industry Sanitarians, Inc., in Cooperation with the National Canners Association. 273 pp. New York: McGraw-Hill, 1952. Price, $5.00.

SINGLE WOMAN OF TODAY. M. B. Smith. New York: Philosophical Library, 1952. 127 pp. Price, $2.75.

STUDY OF THE HEALTH FACILITIES OF THE CITY OF WALTHAM BY THE HEALTH COMMITTEE. Waltham, Mass.: Waltham Community Council, 1952.

SUGGESTED LAND SUBDIVISION REGULATIONS. Housing and Home Finance Agency. Washington, D. C.: Gov. Ptg. Office, 1952. 65 pp. Price, $.45.

SYMPOSIUM ON ESSENTIAL HYPERTENSION. AN EPIDEMIOLOGIC APPROACH. Boston: Commonwealth of Massachusetts, Office of the Secretary, 1951. 368 pp. Price, $3.95.

TEXTBOOK OF CLINICAL PARASITOLOGY. David L. Belding (2nd ed.). New York: Appleton-Century-Crofts, 1952. 1083 pp. Price, $12.00.

TEXTBOOK OF CLINICAL PATHOLOGY. Edited by Seward E. Miller (4th ed.). Baltimore: Williams & Wilkins, 1952. 1049 pp. Price, $9.00.

UNDERSTANDING HEREDITY. AN INTRODUCTION TO GENETICS. Richard B. Goldschmidt. New York: John Wiley, 1952. 221 pp. Price, $3.75.

WOMAN AT WORK. THE AUTOBIOGRAPHY OF MARY ANDERSON, AS TOLD TO MARY N. WINSLOW. Minneapolis: University of Minnesota Press, 1951. 259 pp. Price, $3.50.

YEARBOOK OF PSYCHOANALYSIS, THE. Vol. VII. Sandor Lorand, Managing Editor. New York: International Universities Press, 1952. 271 pp. Price, $7.50.

YOU AND YOUR AGING PARENTS. Edith M. Stern, with Mabel Ross. New York: A. A. Wyn, 1952. 212 pp. Price, $2.75.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Polio and Immunizations—"It is recommended that immunization procedures be not discontinued on a seasonal basis in anticipation of an epidemic. When, however, an outbreak of poliomyelitis of considerable proportion occurs in one's community, then elective immunization procedures in individuals over six months should be deferred." There is a lot more here that you should read.

ANON. Supplementary Report of the Committee on Immunization and Therapeutic Procedures for Acute Infectious Disease (and Panel Discussion following). *Pediatrics* 9, 3: 335 (Mar.), 1952.

Informed Guesses—A chemist's review of scientific progress in many fields, including public health, is commended to you for its own speculative value, but also because of a remarkable, 170 year old prophesy of Benjamin Franklin—one that you may some time want to quote for your own particular uses.

ADAMS, R. Man's Synthetic Future. *Science* 115, 2981:157 (Feb. 15), 1952.

Neurophysiological Observation—When you sleep your blood oxygen goes down and as you wake it rises. What benefit that knowledge will do you is problematic but the study is just the sort that intrigues me—and may have the same appeal to you.

DOUST, J. W. L., and SCHNEIDER, R. A. Studies on the Physiology of Awareness: Anoxia and the Levels of Sleep. *Brit. M. J.* 4756:449 (Mar. 1), 1952.

Teamwork Impressed Him—Who can resist the itch to know what outsiders think of us and our supercolossal way of attacking all social problems, including those in public health? This Edinburgh professor went about the United States and watched us while we put rheumatism in its place.

DUTHIE, J. J. R. Rheumatic Diseases in the U. S. A. *Brit. M. J.* 4754:341 (Feb. 16), 1952.

Why They Came—She asked 175 mothers why they bring their babies to a child health station. Most liked the reassurance they received, some thought it had a good effect on the child. One thought she had to attend. One said ". . . a doctor he just tells you to start boiled egg. Here they tell you how to boil the egg, too."

FOSTER, M. L. Reasons for Attending Child Health Station. *Pub. Health Nursing* 44, 3: 123 (Mar.), 1952.

On Being Sick at Home—"Home care (of the sick) is again becoming

respectable, if not fashionable," writes this commentator. How it can be made an integral part of a medical care program is the gist of his paper. Success will depend upon organization, method of payment, and discriminating use.

GOLDMANN, F. Home Care for the Needy and Medically Needy. *J.A.M.A.* 148, 13:1085 (Mar. 29), 1952.

Doctors and Patients (Swedish Style)—From the president of the Swedish Medical Association comes this brief (3 page), propaganda-free description of public medical services in his country. Anyone remotely interested in medical care will be glad of this objective reporting which concludes: "On the whole this system has worked well."

KNUTSON, D. Medical Security in Sweden. *Brit. M. J.* 4754:61 (Supplement) (Feb. 16), 1952.

Young Ideas—Functions atrophy just as organs do. With older people, mental health is mostly a matter of keeping both at work. Ways to keep them working are the nub of this stimulating paper.

LEMKAU, P. V. The Mental Hygiene of Aging. *Pub. Health Rep.* 67, 3:237 (Mar.), 1952.

Useful "Info"—An expert committee says sun glasses are all right when the intensity of sunlight causes discomfort but that a visor or broad-brimmed hat may be just as comforting. Warnings are issued against "night" glasses or windshields and against rose-tinted advertising claims of all kinds.

MATTHEWS, J. L., *et al.* Tinted Optical Media. *Indust. Med. & Surgery* 21, 3:129 (Mar.), 1952.

Democratic Process—As the noisy Anti's are now in full cry petitioning congress and several state legislatures to ban the "poisoning" of water supplies with fluorine, you may have emergency need for all the supporting scientific opinion you can muster. The A. D. A. comes to your aid with an excellent symposium.

MCKAY, F. S., *et al.* The Dentist's Responsibility in the Fluoridation of Municipal Waters. *J. Am. Dent. A.* 44, 2:133 (Feb.), 1952.

Supports May Become Strait Jackets—A long-time observer of the changing public health administrative scene discusses the advantages and limitations of clearly defining current concepts of over-all programs. It is a challenging presentation of which you won't want to miss a word—and there are many.

MOUNTIN, J. W. The Health Department's Dilemma. Definitions and Functions. *Pub. Health Rep.* 67, 3:223 (Mar.), 1952.

Wages of Freedom—In Brighton (England) they admitted an undiagnosed case of smallpox into a hospital in which 8 of the 14 on the medical staff of the ward had not been vaccinated, and 13 of the 36 nurses and 14 of the 16 other workers had not been protected. The ensuing bedlam is reported in detail. (All the nonimmune doctors contracted smallpox and 5 died; 3 nurses succumbed; 2 domestic workers and one gardener were added to the mortality list.)

PARKER, W. S., *et al.* Smallpox. *J. Roy. San. Inst.* 72, 2:105 (Mar.), 1952.

Acid Test—In Georgia, a million people have had "multiple health tests." Both the patients and their physicians profited from the early case finding. You may debate the merits of the method, conclude the writers, but in Georgia it works. That would seem a pretty convincing sort of argument.

PETRIE, L. M., *et al.* Voluntary Multiple Health Tests. *J.A.M.A.* 148, 12:1022 (Mar. 22), 1952.

What We Know About Noise—Should questions of the dangers of interior noises ever be put before you, almost anything you might need to prime

yourself to answer them will be found in these nine papers ably summarized for handy reference.

ROSENBLITH, W. A. Summary of Conference on Problems of Noise in Industry. *Arch. Ind. Hyg. & Occup. Med.* 5, 2:160 (Feb.), 1952.

Cancer Causes—You will be impressed most by the prodigious amount of reading that must have gone into this review of all the possible incitants to cancer and what might be done about them. When the series is complete it promises to be the last word in the epidemiology of cancer.

WYNDER, E. L. Some Practical Aspects of Cancer Prevention. *New England J. Med.* 246 13:492 (Mar. 27), 1952.

If additional information is desired regarding the articles listed in this Bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

Arch. Ind. Hyg. & Occup. Med. (Archives of Industrial Hygiene and Occupational Medicine), American Medical Association
535 N. Dearborn St., Chicago 10, Ill.

Brit. M. J. (British Medical Journal), British Medical Association House
19 Tavistock Sq., London, W.C. 1.

Indust. Med. & Surgery (Industrial Medicine and Surgery), Industrial Medicine Publishing Co., 605 N. Michigan Ave., Chicago 11, Ill.

J. Am. Dent. A. (Journal of the American Dental Association)
222 E. Superior St., Chicago 11, Ill.

J.A.M.A. (Journal of the American Medical Association)
535 N. Dearborn St., Chicago 10, Ill.

J. Roy. San. Inst. (Journal of the Royal Sanitary Institute)
90 Buckingham Palace Road, London, S.W. 1.

New England J. Med. (New England Journal of Medicine), Massachusetts Medical Society
8 The Fenway, Boston 15, Mass.

Pediatrics (Journal of the American Academy of Pediatrics)
636 Church St., Evanston, Ill.

Pub. Health Nursing (Public Health Nursing), National Organization for Public Health Nursing, 1790 Broadway, New York 19, N. Y.

Pub. Health Rep. (Public Health Reports), Superintendent of Documents,
Gov. Ptg. Office, Washington, D. C.

Science, American Association for the Advancement of Science
1515 Massachusetts Ave., N.W., Washington 5, D. C.

Public Health in Foreign Periodicals

GEORGE ROSEN, M.D., PH.D., F.A.P.H.A.

NOTE: This is the second of three columns devoted to current articles on African public health problems. The first column appeared in the February, 1952, issue of the *Journal*.

Problems of communicable disease and environmental sanitation are very much in the foreground in South Africa today. The provision of adequate and suitable housing, food and drink, clean air, and recreation are recognized as essential to the promotion of health and the prevention of disease. In his presidential address to the Health Officials' Association of South Africa, H. Nelson, Medical Officer of Health of Pretoria, reviews some of these problems.[1] Tuberculosis is widespread and the mortality rate from pulmonary tuberculosis is among the highest in the world. Associated with tuberculosis is bad housing. Housing of nonwhites constitutes one of the most urgent problems, and this need has inevitable repercussions on the white population. Two very important factors in the control and prevention of certain communicable diseases, particularly intestinal infections, are disposal of excreta and a pure water supply. Much has been accomplished in this area, but South Africa lags behind in dealing with the disposal of sewage effluents. There are also a number of densely populated areas still showing fairly high intestinal disease rates through lack of a safe water supply. Infant mortality rates have been reduced considerably during the past fifty years, but the lowest socio-economic group among the whites still has a rate at least twice that of the well-to-do class. Nonwhite rates are even worse. Puerperal sepsis has declined significantly. Venereal disease still constitutes a very difficult and serious public health problem. Nelson feels that a more active educational campaign would help in coping with this problem. Progress has been made in the control of diphtheria, but much remains to be done.

Of interest is the comment that while the death rate from cardiac disease has risen from 84.26 per 100,000 in 1930 to 144.07 in 1947, this increase has been greatest among the higher socio-economic groups. As the economic status gets lower, the incidence decreases, with a very low rate among nonwhites.

THE PROBLEM OF AIR POLLUTION

In consequence of growing industrialization, the subject of air pollution is of great importance to the larger cities of South Africa. The significance attached to this problem is reflected in the frequency with which it is discussed in the public health literature. Everingham discusses the character of the problem and possible measures for reducing and controlling the degree of atmospheric pollution.[2] It is interesting to note that this presentation pays much attention to cases of pollution in the United States. Public interest has been aroused particularly in Johannesburg and Pretoria, but complaints have occurred in other parts as well. Everingham mentions that in Durban, fumes emanating from a factory manufacturing chrome chemicals destroyed or injured 2,000 gum trees on an adjoining plantation over a period of several years. As a result, the Durban municipal authorities laid down standards of purity, and these have been complied with. Several similar cases are mentioned. It is proposed that the situation be handled on a rational, not

an emotional basis. Everingham suggests that the South African Government instruct some national body, such as the Council for Scientific and Industrial Research, to investigate the problem on a national basis and draw up a code to apply to the country as a whole, with modifications for particular areas which need special provisions.

THE SKELETON IN THE CUPBOARD

Food sanitation is another area of considerable concern to South African public health workers.[3] Van Blommestein indicates certain dimensions of the problem in a discussion of protozoan and helminthic infections from food and drink.[4] In Durban, from June, 1945, to June, 1946, there was a total of 3,859 reported cases of amebiasis, and of this number 1,245 cases were whites. Among selected groups of natives in South Africa the incidence was 1.9 per 1,000, while in a group of food handlers 25 per cent were found to be cyst carriers. With regard to helminthic infections, Gittin, Schaffer, and Gunn examined the feces of 399 Indians, 613 Negroes and 415 Coloreds and found that the incidence of infection was 68, 57, and 65 per cent respectively. It was also found that 38 per cent of those infested had more than one type of helminth.

Arnoldi considers the problem of food and drink infection in relation to child health.[5] Among the elements involved in this subject are ignorance, poor and unsanitary environment, poverty, and malnutrition. In relation to food the author emphasizes the need for an adequate supply of protective foodstuffs at reasonable prices, for the use of dried milk in hot climates or in slum areas where there are no proper facilities or suitable storage for fresh milk, and for the control of foodstuffs. In the last category are considered the pasteurization of milk, the regular examination of dairy personnel, the control of meat and meat products, and the washing and decontamination of vegetables and fruits. Furthermore, stress is placed on the urgent need for a concerted health education program. But as Arnoldi points out in conclusion, all this is still to be achieved. In South Africa, she says, "there is chaos. The cities and towns are attempting to control all these services individually and with a limited staff, whereas the country areas have very little, or nothing."

The situation with regard to the hygienic handling of food is discussed by Hiddleston, of the Cape Town City Health Department.[6] The foods considered are milk, bread, fruit and vegetables, and prepared foodstuffs (usually found at delicatessen counters). It must be remembered that in the case of the larger cities and towns, for example, Cape Town, the bulk of the milk supply is obtained from producers who are situated up to 80 miles from the city, and that such producers are not under the immediate and regular supervision of trained health personnel. Cape Town has appointed dairy inspectors whose task it is to visit and license outside producers wishing to sell milk in the city. This has resulted in some improvement of conditions, but owing to the wide dispersal of the producers, visits cannot be as frequent and regular as desirable. It is also indicated that the milkers often have a low standard of personal hygiene. The author stresses that the use of the ubiquitous dipper be prohibited in milk dispensing.

Another important area for improvement is that of delivery methods. In all the larger towns and cities the normal method of milk delivery is in glass bottles of various sizes, which are filled in the milk store and capped with a waxed cardboard disk, or, more recently, overcapped with a metal cap. The washing and sterilization of bottles and cans is invariably performed by native workers, and even where mechanical bottle-washing plants have been installed,

the inspection of the cleaned bottles is similarly left to natives. In general, it appears that neither workers nor producers believe too strongly in principles of hygiene. Similarly, bread, fruit and vegetables, and other foods are exposed to contamination in the course of production, in transportation to market, and in distribution to consumers. Emphasis is also placed on the need for educating the public and the workers in the elements of hygienic food handling.

MEDICAL EDUCATION AND MEDICAL CARE

Two related areas which are being actively discussed in South Africa, as in so many other countries, are the training of the doctor and the organization of medical care.[7] Here, too, there are many more applicants to medical schools than can be admitted, and the question of admission standards is being hotly debated. Another phase of the matter is the need for better integration of the various subjects taught in the medical school. There are at present three medical schools—at Cape Town, Pretoria, and Witwatersrand. It has been proposed that a fourth school be established at Bloemfontein, but opponents of this proposal claim that for many years the teaching facilities now available will be sufficient. It is admitted, however, that a postgraduate school for the training of specialists is needed.

There is also increasing concern about the status of the general practitioner.[8] It is felt that as a result of the development of medicine his situation has become precarious and he must be reintegrated into a healthy modern system of medical care devoted to prevention and cure. On the means for accomplishing this end there is no agreement.

According to C. M. Grundlingh, the situation of the general practitioner is changing for the worse.[9] Among the factors tending to produce this result is the trend among patients to seek care by specialists. Coupled with this general factor is the circumstance that when patients avail themselves of free hospitalization they are usually lost to the general practitioner or to the specialist not connected with the particular hospital. Grundlingh feels that there is only one answer to the South African problem—that the general practitioner must become a more highly trained person and very much more experienced before venturing into private practice. To this end, he recommends that the medical curriculum be lengthened by at least two years, during which the student should receive intensive practical training to fit him for general practice. In addition, steps should be taken to reduce the overproduction of medical practitioners in South Africa. (It should be obvious that this overproduction bears little relation to the health needs of the South African population. Such "overproduction" as exists is related solely to the effective demand. The nonwhite population is sorely in need of medical care but is in no position to obtain what it needs.)

South Africa has several forms of prepaid medical care.[10] First, there are so-called Medical Aid Societies, formed primarily to assist contributing members to meet their expenses in connection with illness. The majority of the societies function as approved by the Medical Association of South Africa, and their members receive care according to a set fee schedule. For a society to be approved, it must indicate that the average salary of its members exceeds £700 per annum and must guarantee the payment of the doctor's fees. The fundamental principles of this arrangement are fee for service and free choice of physician. Most doctors would prefer this arrangement.

A second type is provided by the Medical or Sick Benefit Societies. These consist of members who contribute to a fund for the purpose of employing doctors either on a full-time or part-time

basis to attend sick members, to pay for medicines, and to provide sick pay. The doctors are remunerated on either a capitation or a salaried basis and are obligated to operate in terms of the rules and regulations of the society. Many of these organizations limit their benefits to office and home care by general practitioners. Some allow a restricted specialist service. Those societies which give a more comprehensive service, including hospitalization and all specialist services, usually have specialists on a salaried basis. While the Medical Association has laid down standards for Sick Benefit Societies, very few societies conform to these standards.

In addition, there are industrial and commercial concerns which appoint physicians on a full-time or part-time basis and, last but not least, there are full-time or part-time hospital appointments. These have become increasingly significant since the implementation of the Provincial Hospitals Ordinance in 1946.[11] Under this Ordinance, "honorary" hospital appointments were replaced by paid positions.

The transitional state of medical care in South Africa is well illustrated by a recent editorial in the *South African Medical Journal*.[11] With the development and expansion of medical services, certain technical procedures inherently within the field of medical practice have assumed sufficient status to justify their delegation to persons adequately trained in the appropriate techniques. This is the case with optometrists in South Africa. Here a multiplicity of suitably and unsuitably qualified persons have engaged in prescribing and dispensing lenses for errors of refraction. Owing to the absence of any suitable legislation, these persons have not been properly regulated. The medical profession is now urging that optometrists be licensed, so that it would be possible to establish adequate standards of proficiency to be required of those who wish to practise optometry.

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ASSOCIATION NEWS

EIGHTIETH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
CLEVELAND, OHIO, OCTOBER 20–24, 1952

FELLOWSHIP IN THE AMERICAN PUBLIC HEALTH ASSOCIATION

The grade of Fellowship was established in the American Public Health Association in 1922. Professional workers in public health are eligible for election as Fellows under certain conditions and as an indication that they have achieved a recognized professional standing. As of January 1, 1952, the total membership of the Association was 12,555, including 2,657 Fellows, or 21 per cent of the total.

Questions are frequently asked regarding the requirements for Fellowship and the following statement outlines the provisions of the By-laws governing qualification and election.

Persons who have been members of the Association for at least two years and who have reached their 30th birthday are eligible to apply if, in their opinion, they meet the conditions of one or more of the six clauses in the By-laws defining "an established professional standing." These six possible approaches are as follows:

a. A person who has rendered acceptable service for two or more years in a responsible public health position and who has been awarded in course a degree of Doctor of Public Health, Doctor of Science in Public Health, Doctor of Philosophy in Public Health, Doctor of Medicine with at least one year of graduate study in public health in a university, Master of Public Health, Diploma in Public Health, or other equivalent degrees, according to standards approved by the Executive Board of the American Public Health Association.

b. A person who has been awarded in course an academic or professional degree involving training in public health and who has been regularly engaged in health work for at least five years, having rendered meritorious service as a health officer or in responsible charge of work in either a public or private health agency.

c. A person who has done notable original work in public health or preventive medicine of a character to give him a recognized standing.

d. A person regularly engaged in health work for at least five years, who has given evidence of special proficiency, who has attained a recognized standing.

e. A teacher of public health or one of its constituent sciences who has attained distinction as an expounder of the principles of public health or its constituent sciences. Such a teacher shall have had at least five years' experience as a teacher of public health subjects. Any years of experience as defined in paragraphs "b" and "d" that the applicant may have had shall be considered the equivalent of the same number of years' experience as a "teacher."

f. A person not covered by the above, who has made substantial contributions to public health work in his chosen branch, who has attained a recognized professional standing.

Persons wishing to apply should request a Fellowship application blank from the American Public Health Association Membership Department, 1790 Broadway, New York 19, N. Y. Applications are accepted up to August 1 each year for consideration by the Gov-

erning Council at the fall meeting. It is important to make clear that members themselves should take the initiative in submitting such applications. Neither the Sections nor the A.P.H.A. administrative staff are authorized to solicit applications. This means that, although over 3,000 persons have been duly recognized with this grade of affiliation since 1922, there are other persons well qualified who have never initiated the process of applying for Fellowship. It should be clear that members should not await action by others if they wish to attain Fellowship. It is necessary and proper for them to take the first step.

An application for Fellowship requires sponsorship by two Fellows of the Section with which the applicant desires to be affiliated. These personal signatures are to be obtained by the applicant before submitting the completed application. The A.P.H.A. office will assist, on request, in determining the Section with which prospective sponsors are affiliated. Applications from persons not wishing to be identified with a particular Section and requesting unaffiliated Fellowship may be sponsored by any two Fellows of the Association.

When properly sponsored and otherwise completed, the application is sent to the A.P.H.A. office, after which the list of persons applying is published in the *American Journal of Public Health*, usually in the September issue, but in any case not less than 15 days before the date for the Annual Meeting. An established routine is followed for review by the Section Councils (unaffiliated applications are reviewed by the Executive Board) and by the Committee on Eligibility. This Standing Committee of the Association is made up of one Fellow from each of the 13 Sections, plus a Chairman elected by the Executive Board. This group is under instructions from the Governing Council to examine each application in accordance with the provisions of the clause of the By-laws chosen by the applicant, and to apply the criteria with precision in each case. Final election is by the Governing Council at the second meeting at each annual session.

The privileges of Fellowship include eligibility to serve as an officer of the Association or one of the Sections, Chairman of an Association or Section Committee (over one hundred in number), a member of one of the four Standing Committees, a member of the Governing Council or Executive Board, and the right to vote on amendments to the Constitution. Some Civil Service and merit system records depend upon Fellowship in the American Public Health Association as an achievement deserving recognition in applicants.

The dues of Fellows are $15.00 annually, and include a subscription to the *American Journal of Public Health* and other services to which members are eligible. Life membership is available at $200, covering all future annual dues.

Applications for Fellowship to be considered at the 80th Annual Meeting in Cleveland, Ohio, October 20–24, should be filed with the Association as soon as they are completed, and in any case not later than August 1. For further information, address the Membership Department, American Public Health Association.

NOMINATIONS FOR THE GOVERNING COUNCIL

Article VII, Section 1, of the A.P.H.A. By-laws reads as follows: "There shall be a nominating committee, to be known as the Nominating Committee for Elective Councilors, composed of one Fellow elected by each Section at the preceding Annual Meeting, and an additional Fellow designated by the Executive Board, the latter serving as Chairman. This Committee shall present to the Administrative Office not less than six months before the Annual Meeting the names of at least twenty and not more than thirty Fellows of the Association selected with due regard to geographical and membership considerations as nominees for the Governing Council."

For 1952, Lucy S. Morgan, Ph.D., has served as chairman of this Committee, and the Section representatives are as follows:

Solomon J. Axelrod, M.D., Medical Care Section
Charles F. Blankenship, M.D., Health Officers Section
Herbert M. Bosch, M.P.H., Engineering Section
H. Trendley Dean, D.D.S., Dental Health Section
Jean S. Felton, M.D., Industrial Hygiene Section
Theodora Floyd, R.N., Public Health Nursing Section
Edythe P. Hershey, M.D., Maternal and Child Health Section
Nell Hirschberg, Ph.D., Laboratory Section
Alexander D. Langmuir, M.D., Epidemiology Section
Edith M. Lindsay, Ed.D., School Health Section
Hugo Muench, Jr., M.D., Statistics Section
Horace L. Sipple, Ph.D., Food and Nutrition Section
Ruth Sumner, Ph.D., Public Health Education Section

In reporting the names of the following Governing Council nominees to the membership, the Committee wishes to remind all Fellows of the Association that Section 3 of Article VII provides that "upon the petition of twenty-five Fellows, the Nominating Committee shall add the name of any Fellow to the nominees selected by it, provided such petition is received not less than three months before the Annual Meeting." This means that names will be added to the following list if properly supported by petition and received in the Administrative Office not later than July 20.

Official ballots containing the names of the following nominees and any added by petition will be mailed to all Fellows and members in good standing early in August, 1952. The ten nominees receiving the highest number of votes on the ballots cast by Fellows and members will be declared elected to the Governing Council for a three year term expiring in 1955.

Katherine Bain, M.D.
U. S. Children's Bureau
Washington, D. C.

Rodney R. Beard, M.D.
Stanford University
San Francisco, Calif.

Harry J. Becker, M.A.
Commission on Financing of Hospital Care
Chicago, Ill.

Philip E. Blackerby, Jr., D.D.S.
W. K. Kellogg Foundation
Battle Creek, Mich.

Bertlyn Bosley, Ph.D.
State Board of Health
Raleigh, N. C.

Dean A. Clark, M.D.
Massachusetts General Hospital
Boston, Mass.

E. Gurney Clark, M.D.
Columbia University
New York, N. Y.

Roy L. Cleere, M.D.
State Department of Health
Denver, Colo.

Harold F. Dorn, Ph.D.
National Institutes of Health
Bethesda, Md.

Hazel V. Dudley, R.N.
State Department of Health
Hartford, Conn.

R. Eugene Dyer, M.D.
Emory University
Atlanta, Ga.

John W. Fertig, Ph.D.
Columbia University
New York, N. Y.

Lloyd Florio, M.D.
University of Colorado
Denver, Colo.

Franklin M. Foote, M.D.
National Society for the Prevention of Blindness
New York, N. Y.

Arthur C. Hollister, M.D.
State Department of Public Health
Berkeley, Calif.

Sally Lucas Jean, M.A.
441 East 20th St.
New York, N. Y.

Fred Mayes, M.D.
City Health Department
Brookline, Mass.

M. Allen Pond, M.P.H.
U. S. Public Health Service
Washington, D. C.

Marian G. Randall, R.N.
Visiting Nurse Service of New York
New York, N. Y.

Beryl J. Roberts, M.P.H.
Harvard University
Boston, Mass.

Harold R. Sandstead, M.D.
Vanderbilt University
Nashville, Tenn.

Carl L. Sebelius, D.D.S.
State Department of Health
Nashville, Tenn.

John W. Shackelford, M.D.
State Health Department
Oklahoma City, Okla.

Thomas E. Shaffer, M.D.
St. Christopher's Hospital for Children
Philadelphia, Pa.

Cassie B. Smith, M.S.P.H.
State Board of Health
Jackson, Miss.

Alan E. Treloar, Ph.D.
University of Minnesota
Minneapolis, Minn.

Samuel M. Wishik, M.D.
University of Pittsburgh
Pittsburgh, Pa.

RESOLUTIONS COMMITTEE FOR CLEVELAND MEETING

The following Fellows of the Association have been appointed by Gaylord W. Anderson, M.D., president, as members of the Resolutions Committee to serve at the 80th Annual Meeting in Cleveland:

William A. Brumfield, Jr., M.D., *Chairman*
(State Office Building, Albany, N. Y.)
Harold M. Erickson, M.D.
Bleecker Marquette
Malcolm H. Merrill, M.D.
Janice Mickey, R.N.
Walter J. Pelton, D.D.S.
Clarence I. Sterling, Jr.

The Committee is anxious to receive suggested resolutions in advance of the Annual Meeting. Such resolutions should be sent to the chairman, Dr. Brumfield. As usual, arrangements will be made to collect proposed resolutions at the Annual Meeting also. A resolutions box will be placed in the general area of the registration desk in the Public Auditorium.

DIAGNOSTIC PROCEDURES AND REAGENTS IN TURKISH

Permission has been extended by the Association to the Central Institute of Hygiene, Ankara, to translate into Turkish the third edition of *Diagnostic Procedures and Reagents*. Nusret H. Fisek, M.D., head of the Biologics and Antibiotics Control Division of the In-

stitute will make the translation. The volume will be published and distributed on a nonprofit basis by the Institute. Other Association volumes have been translated into French, German, Italian, Portuguese, Siamese, and Spanish. This will be the first translation into Turkish.

The third edition of *Diagnostic Procedures and Reagents* was prepared by the Subcommittee on Diagnostic Procedures and Reagents, Ralph S. Muckenfuss, M.D., chairman of the Coordinating Committee on Laboratory Methods. It was approved for publication by the Committee on Research and Standards.

THE COMMITTEE ON RESEARCH AND STANDARDS APPROVES BACK PRESSURE-ARM LIFT METHOD FOR ARTIFICIAL RESPIRATION

The Committee on Research and Standards has voted without a dissenting vote acceptance of the recently developed back pressure-arm lift (sometimes known as the Holger-Nelson) method of artificial respiration. This method has already been approved by various national organizations, including the American National Red Cross, the Armed Forces, the Federal Civil Defense Administration, and the Council on Physical Medicine and Rehabilitation of the American Medical Association. The action of the Committee was taken after study and report by a referee appointed by the Committee to investigate the new method. Through this action the Committee on Research and Standards joins with these other national groups in recommending use of the new method of resuscitation as being one that is more effective, easier to administer and simpler to teach. Anyone desiring specific information with regard to the method can obtain it through the local chapter of the American Red Cross or by writing to the national headquarters in Washington.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

John D. Cross, M.D., P.O. Box 187, Madison, Fla., Director, Madison and Taylor County Health Dept., State Board of Health

Charles L. Leonard, M.D., Box 848, Elkins, W. Va., Health Officer, Randolph-Elkins Health Dept.

Semeon Saltefors, M.D., Nybrogatan 42, Stockholm, Sweden, Student, Postgraduate School for Public Health, Columbia Univ., New York, N. Y.

Leroy D. Soper, M.D., Halifax County Health Dept., South Boston, Va., Health Officer, Pittsylvania District, State Health Dept.

Harold Stein, M.D., 76 Broadway, Arlington, Mass., Student, Harvard School of Public Health

Laboratory Section

Joe M. Blumberg, M.D., Walter Reed Army Hospital, Washington 12, D. C., Pathologist and Asst. Chief of Laboratory Service

George J. Coleman, Jr., Pythian Bldg., Coleman Laboratory, Wheeling, W. Va., Chief Chemist and Bacteriologist

Frank J. DeHooge, P.O. Box 268, Little Falls, N. J., Supt. of Purification Division of Pollution Control, Passaic Valley Water Commission

Glen L. Hays, M.S., American Can Co., Maywood, Ill., Supervisor of Bacteriological Group

Major William H. Lee, MSC, Chemical Corps Biological Laboratories, Camp Detrick, Md., Clinical Laboratory Officer, U. S. Air Force

Norman H. MacBeth, B.S.A., R.R. 1, Fairville, New Brunswick, Canada, Production Manager, General Dairies Ltd., Saint John, N.B., Canada

Harriet B. Sizer, M.S., Orange County Health Dept., Court House Annex, Room 302, Santa Ana, Calif., Supervisor, Public Health Bacteriologist

F. E. Vandaveer, Ph.D., 1201 East 55th St., Cleveland, Ohio, Director of Laboratories, The East Ohio Gas Co.

Statistics Section

Jacob M. Kerner, 2122 Quentin Road, Brooklyn 29, N. Y., Chief, Division of Records, Dept. of Health, New York City

Arthur S. Kraus, 15 Leonard Place, Albany 2, N. Y., Biostatistician, New York State Health Dept.

Catherine V. Lawrence, 712 W. Woodlawn, Louisville, Ky., Statistician, State Dept. of Health

Marvin Maizlish, 1038 S. Genesee, Los Angeles 19, Calif., Student, Univ. of California Los Angeles

Rose Sachs, 2124 Pennsylvania Ave., N.W., Washington 7, D. C., Survey Statistician, Public Health, Veterans Administration

Engineering Section

Joseph C. Alvarez, M.P.H., 419 5th Street, P.O. Box 29, West Palm Beach, Fla., Chief Sanitarian, Palm Beach County Health Dept.

Jack A. Bell, Mechanicsville, Md., Sanitarian, State Dept. of Health

Edward J. Camera, M.Sc., 9 Clark Court, Lowell, Mass., Student, Univ. of Massachusetts

Lt. Col. Jack C. Carmichael, 125 N. Abingdon St., Arlington, Va., Chief, Environmental Sanitation Branch, Office of the Surgeon General, U. S. Air Force

Glen F. Harland, 406 C. E. Valencia Ave., Burbank, Calif., Health Inspector, City of Burbank

Gordon P. Larson, 410 S. 2nd Ave., Arcadia, Calif., Director, County of Los Angeles Air Pollution Control District

Major Juan M. Ramos, 517 Campbell Lane, Baltimore 12, Md., U. S. Air Force, Biological Laboratory, Camp Detrick, Md.

Elmer N. Searls, D. Agr., 25 Fourth Ave., Newark 4, N. J., Exec. Director, Milk Dealers' Assn. of Northern New Jersey

Frederick A. Siino, M.S., 10 Burritt Ave., South Norwalk, Conn., Sanitarian, Norwalk Dept. of Health

Edward R. Taddeo, M.S.P.H., 32 Washington Ave., Natick, Mass., Sanitarian, Cambridge Health Dept.

Thorvald J. Therp, Hall of Justice, San Jose, Calif., Milk Inspector, Santa Clara County Health Dept.

Food and Nutrition Section

Lawrence A. Beyer, 701 Woodland Ave., Cleveland 15, Ohio, Vice-President, Ohio Creamery Supply Co.

Gretchen E. Collins, Ed.M., Box 332, University, Miss., Instructor in Nutrition and Health, Univ. of Mississippi

M. Farid H. Hussein, M.S., 8907 49th Ave., College Park, Md., Graduate Student (Egyptian Government Scholarship)

Leonard A. Maynard, Sc.D., Ph.D., Cornell Univ., Savage Hall, Ithaca, N. Y., Professor of Biochemistry and Nutrition, Director of School of Nutrition

Marie T. Pfunder, M.S., State Board of Health, Nutrition Section, Raleigh, N. C., Senior Nutritionist

Maternal and Child Health Section

Ruth A. Fish, R.N., 76 Carmine St., New York 14, N. Y., Exec. Director, United Cerebral Palsy Assn. of New York City, Inc.

Janet B. Hardy, M.D., C.M., Municipal Bldg., City Health Dept., Baltimore, Md., Director Bureau of Child Hygiene

Marcel Langlois, M.D., 53 Casot Ave., Quebec City, Canada, Professor of Pediatrics, Laval Medical School

Madeleine E. Morcy, M.D., 12 East 97th St., New York 29, N. Y., Health Officer-in-training, New York City Health Dept., assigned to Harvard School of Public Health

Public Health Education Section

Osly J. Gates, M.S., 3568 Virgil Blvd., New Orleans 22, La., Instructor in Health and Physical Education, Gaudet Episcopal High School

Martin J. Gerber, 217 Furnald Hall, Columbia Univ., New York 27, N. Y., Student, School of Public Health

Donald Held, 326 Locust St., Akron 2, Ohio, Exec. Director, Summit County Tuberculosis and Health Assn.

Eva H. Larson, M.S., 803 South 2nd Ave., Sterling, Colo., Exec. Secy., Northeast Colorado Tuberculosis and Health Assn.

Elsa J. Nelson, R.N., M.P.H., Boulevard, Newport, R. I., Research Asst., Harvard School of Public Health

A. F. Schaplowsky, M.S., M.P.H., 712 W. 16th, Topeka, Kans., Public Health Educator, Kansas Tuberculosis and Health Assn.

Robert W. Severns, M.A., 541 South 18th, Apt. 207, Lincoln, Neb., Public Health Educator, State Dept. of Health

Marian L. Wood, M.S., 148 Martine Ave., White Plains, N. Y., Instructor of Public Health Education, Westchester County Dept. of Health

Public Health Nursing Section

Eleanor P. Duffy, M.S., 342 Westminister Ave., Elizabeth, N. J., Exec. Director, Visiting Nurse Assn. of Eastern Union County

Adelaide S. Friedman, R.N., 1115 W. Moreland, Phoenix, Ariz., Public Health Nurse, Maricopa County Health Unit

Helen W. Goodenough, M.A., P.O. Box 576,

San Jose, Calif., Director of Nursing, Santa Clara County Health Dept.

Elizabeth M. Ogden, 585 Highland Ave., Rochester 20, N. Y., Asst. District Supervising Nurse, New York State Department of Health

Adrienne C. Proskine, Dept. of Health, City Hall, Schenectady, N. Y., Director of Nurses

Nancy L. Ruth, M.N., 317 5th St., Colusa, Calif., Director and Supervisor, Nursing Division, Colusa County Health Dept.

Alice F. Serinek, 7211 Thomas Blvd., Pittsburgh 8, Pa., Supervisor, Bureau of Public Health Nursing, Pittsburgh Dept. of Health

Sister Alma, R.N., M.S., Glockner-Penrose Hospital, Seton Unit, Colorado Springs, Colo., Director, Loretto Heights College Division of Nursing

Epidemiology Section

Luther E. Fredrickson, D.V.M., M.P.H., Box 243, Highland, Ill., Rabies Control Supervisor, St. Louis Health Division

Melvin B. Goodman, M.D., 210 Lancaster St., Albany, N. Y., Asst. Surgeon, (R), USPHS, Epidemiologist, CDC, Bureau of Epidemiology

J. Thomas Grayston, M.D., M.S., 3900 Eaton St., Kansas City 3, Kans., Epidemiologist, Kansas City Field Station, Epidemiology Branch, Communicable Disease Center

Robert H. Kokernot, M.D., D.V.M., 1664 E. Cold Spring Lane, Baltimore 18, Md., Student, Johns Hopkins Univ., School of Hygiene and Public Health

William H. Stewart, M.D., P.O. Box 270, Thomasville, Ga., Chief, Epidemiological Unit, Thomasville Station Section, Communicable Disease Center, USPHS

James R. Strain, M.D., 6805 Gist Ave., Baltimore 15, Md., Asst. Epidemiologist, State Health Dept.

School Health Section

O. L. Ader, M.D., Health Dept., Durham, N. C., Director of Clinics, Durham City-County Health Dept.

Paul C. Desmangles, M.D., 462 Elm St., New Haven, Conn., Special Student, Yale Univ.

Mary V. Montgomery, M.A., 218 E. College Ave., State College, Pa., Instructor in Health and Physical Education, Pennsylvania State College

Dental Health Section

Charles H. Henshaw, D.D.S., State Office Bldg., Des Moines, Ia., Director, Division of Dental Hygiene, State Dept. of Health

Joseph C. Muhler, D.D.S., Ph.D., Indiana Univ., Dept. of Chemistry, Bloomington, Ind., Asst. Professor

Medical Care Section

R. O. Bullis, M.D., 1924 Broadway, Oakland 12, Calif., Medical Counselor, Henry J. Kaiser Co.

Thompson A. Ferrier, M.D., Box 344, Russellton, Pa., General Practice, Miners Community Medical Group

George E. Martel, M.S.P.H., 60 John St., New York, N. Y., Asst. Group Manager, Bureau of Accident and Health Underwriters

Frederick B. Roth, M.D., Public Health Bldg., Regina, Sask., Canada, Deputy Minister, Dept. of Public Health

Julius E. Stolß, M.D., M.S., 1260 73rd St., Brooklyn 28, N. Y., Physician

Unaffiliated

James A. Edgett, D.V.M., 472 New Park Ave., West Hartford, Conn., Student, Harvard Sschool of Public Health

Virgil W. Langworthy, 50 East 41st St., New York 17, N. Y., Research Chemist, The Chlorine Institute, Inc.

John E. LaPlante, M.S., Town Hall, Ipswich, Mass., Health Officer, Ipswich Health Dept.

Yan Tim Wong, M.D., Univ. of Hawaii, Bureau of Mental Hygiene, Honolulu, Hawaii, Acting Chief, Dept. of Health

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MATERNAL AND CHILD HEALTH PROGRAMS DURING A PERIOD OF NATIONAL EMERGENCY

A STATEMENT BY THE ASSOCIATION COMMITTEE ON CHILD HEALTH, AMERICAN PUBLIC HEALTH ASSOCIATION

GENERAL OBSERVATION

In planning the nature and extent of maternal and child health services during the present, protracted national emergency one point should be made with the utmost force and clarity.

Children are the nation's most valuable resource. They are not expendable. In a world where our enemies may outnumber our friends this is acutely evident. Moreover, in a period of history where technological prowess becomes a necessity for survival, the quality of each individual citizen becomes a vital ingredient of national strength.

The chief and somewhat unique characteristic of the current emergency is its long-term and unpredictable nature. It is a safe guess that we are in for a twenty year pull or longer. In terms of infants and children this is an entire generation. In terms of our country this generation is the hope and strength of the future.

In talking of "defense" and "nondefense" spending, let there be no mistake about expenditures for protecting and promoting the health of mothers and children. This constitutes "defense" spending of high priority. Public health services for mothers and children and for restoration of physically handicapped children are not "frills." This is true regardless of whether one is motivated by sentiment, humanitarianism, or hard-boiled military common sense.

In addition to the indefinite duration, other characteristics of this emergency which should guide the planning of maternal and child health services include: The dislocation and incompleteness of families where the father is in the armed forces or the mother of young children is working outside the home, deprivations due to the high cost of living, and the general emotional stress on children and parents as a result of the war of nerves and the fear of bombing. There is also to be considered the gradual attrition of the civilian supply of professional health personnel as more and more physicians, dentists, nurses, and social workers are called for military or related service.

Children need loving care and guidance from wise parents who have confidence in their capacity to help their children. They need a secure, satisfying home, reasonably free from want. They need access to health, educational, recreational, social and religious services and opportunities. Most of all they need recognition of their individual worth and respect for their feelings from all who touch their lives.

To meet these needs in a time of national emergency, it is essential to help parents face life with courage, to make readily available to them a variety of services they may be unable to provide through their own resources, and to consider evacuation measures which separate young children from their mothers, and parents from each other, only after all other means of mass safety have been evaluated. Education and drills for self-protection should be directed toward increasing the confidence of parents and children in their ability to meet possible disasters, and should be related to familiar experiences such as fire drills or practice in traffic rules.

There is danger that attention to the special problems of the emergency will obscure the single fact that the ultimate goal remains unchanged—to rear healthy, happy children who will become responsible, mature citizens. A basic principle in the provision of services is

that the resources of established national, state, and local agencies should be utilized to the fullest extent possible and supplemented when necessary to meet new or increased demands. There may be a new urgency, new difficulties, and a need for special emphasis here or there. However, the established maternal and child health programs will by and large continue to need the same unremitting cultivation and the same evaluation of results and costs as in time of peace. Directors of these programs must constantly look for places where the efficiency can be increased and duplication of effort be eliminated.

APPLICATION TO EXISTING MCH PROGRAMS

1. The current widespread interest in the development and use of new methods of evaluation of various types of maternal and child health services should be encouraged, so as to retain the effective services and discontinue others even though rooted in tradition.

2. Immediate steps should be taken to develop field training areas for professional staff working in and developing maternal and child health and crippled children's services.

3. In planning emergency services at a time of disaster, maternity patients need high priority in safety and health plans to aid them in carrying pregnancies to term and affording as safe delivery and post-partum care as possible. In those sections of the country where delivery by midwives is still common, the probability of a temporarily increased need should be recognized, and facilities for the training, licensing, and supervision of nurse-midwives and midwives should be stepped up.

4. Current emphasis on improved care in hospital and home for premature infants should be expanded to all newborn infants.

5. The further development and extension of effective education of mothers by qualified professional persons should be encouraged. The possibilities of group and other newer educational methods should be explored as ways of providing more economical and effective education about maternity and child rearing.

6. The quality, number, and frequency of maternity clinics and child health conferences should be increased, especially in rural areas where there are few physicians and which are not now covered and in areas suddenly congested by influx of military dependents or defense workers. Immunization programs including tetanus should be accelerated.

7. Maternal and child health programs should provide health supervision for day care centers for children of working mothers and should establish and cause to be maintained adequate standards for health in these centers.

8. Certain screening technics for case finding, especially those for hearing and speech disorders and visual defects, should be adapted to the infant and preschool age group. This does not imply that periodic well child health supervision should be curtailed or discontinued. At the same time certain traditional routines of mass medical and dental examinations should be carefully scrutinized with a view toward discontinuance. Examples of such activities are the preschool summer round-up and the routine dental examination by a dentist (without treatment) of large groups of children.

9. The present world-wide unrest makes it especially urgent that accepted concepts of preventive mental hygiene and anticipatory guidance be integrated into all aspects of maternal and child health programs, and that expansion of child guidance clinic programs be encouraged. The scope of these programs should include parental education.

10. High priority should be assigned to promoting coöperative planning between health departments and education departments in order to improve school

health services by effective division of administrative responsibility.[1-3]

11. Dental caries is almost universal among school children, over 95 per cent of them being affected. The usual school program of dental examinations by dentists with referral to practising dentists for care has by and large proved ineffective in obtaining correction of the dental defects found. There are not enough dentists to fill all the cavities resulting from dental caries and maintain teeth in good condition. This type of program should be replaced by one which makes more profitable use of time of professional personnel and at least emphasizes the possible educational and other values of the dental examination.[4] Dental treatment services under community auspices should be continued and expanded. During the last few years it has been shown that the incidence of dental caries can be reduced by about 40 per cent through the topical application of sodium fluoride to the teeth of large numbers of children, and reduced by 60 per cent or better through adding sodium fluoride to the community water supply. Existing dental programs should be revised to give major emphasis to these methods of reducing caries.

12. In undertaking the spending of public funds for specific health deviations, as in developing services for crippled children, program emphasis should stem from sound public health criteria rather than from sentiment. Basic criteria are:

1. The number of children affected.
2. The amenability of the handicap to medical therapy and preventive measures.
3. The likelihood of the child's becoming, if untreated, dependent, unemployable, and a permanent public responsibility at far greater cost.
4. The unfavorable effect of the handicap on the emotional status of the child and his family.
5. The extent of interference with satisfactory progress in school.

Secondary factors which may modify the direction or scope of the program for a time include:

6. The cost per child to secure maximum benefit.
7. The progressiveness of the condition.
8. The availability of special personnel and facilities for treatment.

It is urged that the above criteria be used in developing services for crippled children rather than the specific categorical disease approach.

Unfortunately, preoccupation with the individual category often has resulted in forgetting that one is dealing with the health of the "whole child," which means his physical, mental, and social well-being, not merely the absence of disease or infirmity. That the child with a physical handicap has all the health problems of any growing and developing child is a principle far too frequently overlooked. Moreover, physical handicaps are often multiple. Thirty per cent of children with cerebral palsy also have convulsive seizures, and a large additional group have speech disorders. The child with a cleft palate is not just a case for the plastic surgeon, but needs the attention of the pediatrician, speech therapist, prosthodontist, and orthodontist as well.

Crippled children's programs should make use of pediatric services and should be closely integrated with maternal and child health programs. This will facilitate the *child-centered approach* and will enhance application of preventive measures to reduce the number of crippled children.

13. As a final point, there are several related activities which, though not directly the responsibility of maternal and child health or crippled children's services, should be supported and active cooperation extended to the agencies assuming the principal responsibility for them. From these activities, four have been selected for special mention, not only because of their intrinsic importance but also because of a new emphasis demanded by the present national emergency. These are:

a. Protection of women in industry.

b. Interpretation, enforcement, and evaluation of child labor laws.

c. Expanded provisions for special education and vocational training of handicapped children and vocational placement of handicapped young adults.

d. Provision of more extensive, comprehensive, and effective health education to all school children.

In a time of emergency, needs and demands for service increase out of proportion to available facilities and personnel. There is an added burden placed on the administrator to maintain a balance between the basic requirements of his program and the shortages which inevitably make more difficult their proper carrying out. Preserving the health and promoting the welfare of our children are keystones in the conservation of our human resources and in maintaining our strength and vitality as a nation. There will be difficulties enough in administering programs in an emergency; surely any threats to these programs occasioned by unwise legislative views of economy should be vigorously combated.

SAMUEL M. WISHIK, M.D.,
Chairman

MARGARET ADAMS, R.N.
KATHERINE BAIN, M.D.
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J. M. WISAN, D.D.S.
KENT A. ZIMMERMAN, M.D.

ACKNOWLEDGMENT—In addition to certain members of the Committee, Dr. Edward Davens contributed time and effort to the preparation of this statement.

REFERENCES

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2. *Priorities in Health Services for Children of School Age: Recommendations.* Washington, D. C.: Children's Bureau, Office of Education, Public Health Service, Federal Security Agency, 1950. 24 pp.
3. *Better Health for Children of School Age.* Washington, D. C.: Children's Bureau, Office of Education, Public Health Service, Federal Security Agency. In Preparation.
4. *Reports of Officers and Councils, American Dental Association, 92nd Annual Session, Washington, D. C., October 15–18, 1951.* pp. 26–27.

ADVANCE REGISTRATION

FOR 80TH ANNUAL MEETING

AMERICAN PUBLIC HEALTH ASSOCIATION

CLEVELAND, OHIO, OCTOBER 20–24, 1952

Members and Fellows of the American Public Health Association and other health workers who are not members who wish to register in advance for the Cleveland Annual Meeting are cordially invited to do so. (NOTE: This year the Registration Desk will be located outside the exhibit hall at the entrance to the Auditorium. Admission to the exhibit area and meeting rooms will be only by display of the official badge. Advance registration will speed your receipt of the badge.)

Each person should fill in the coupon below or a facsimile thereof and mail it with the registration fee to the Central Office. We will prepare for your attendance in advance and you can then pick up your program and badge without delay at a special section as soon as you arrive at Registration Headquarters in the Public Auditorium. At that time your registration will have been recorded and it will only be necessary for you to supply your local hotel and room number to complete the registration procedure. If you know now at which hotel in Cleveland you will be staying, please add this information below.

Advance registrations cannot be accepted and recorded if received in Central Office after October 1, 1952.

Return to American Public Health Assn.,
1790 Broadway, New York 19, N. Y.

I wish to register in advance for the Cleveland Annual Meeting.

NAME .....

BUSINESS ADDRESS .....

CITY & STATE .....

TITLE OF POSITION .....

HOTEL IN CLEVELAND .....

Nonmember of A.P.H.A. Registration fee $4. ☐

Member of A.P.H.A. Registration fee $3. ☐

Fellow of A.P.H.A. Registration fee $3. ☐

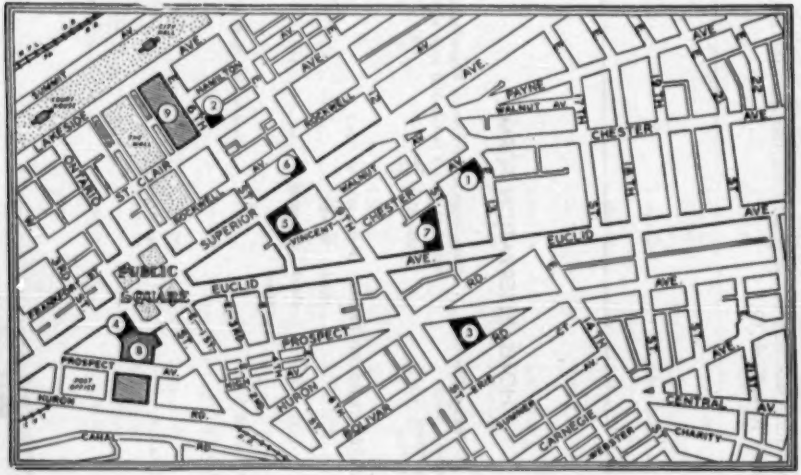
Please send check or money order for amount shown

If you will be accompanied by your wife (or husband) or other dependent member of your family who is entitled to free registration, please list the name and address below:

NAME .....RELATIONSHIP TO DELEGATE .....

STREET ADDRESS .....CITY & STATE .....

Street Plan of Cleveland Showing Location of Housing Bureau Hotels



Key

1. Allerton Hotel
2. Auditorium Hotel
3. Carter Hotel
4. Cleveland Hotel
5. Hollenden Hotel
6. Olmsted Hotel
7. Statler Hotel
8. Union Station—Terminal Tower
9. Public Auditorium

Hotel Reservation form is on the reverse side. Please indicate your first, second, and third choice hotel. Single rooms are limited.

All reservations will be confirmed if requests are received not later than October 10.

SCIENTIFIC EXHIBITS AT THE CLEVELAND ANNUAL MEETING

The Committee on Scientific Exhibits is accepting applications for scientific exhibit space at the 80th Annual Meeting. Health departments, schools of public health, and voluntary agencies are invited to participate. Individual research projects may also be exhibited.

Applications for space may be obtained from the Association Office—1790 Broadway, New York 19.

HOTEL RESERVATION FORM

MAIL TO: Mrs. Louise D. Perkins, Director
A.P.H.A. Housing Bureau
511 Terminal Tower
Cleveland 13, Ohio

Single rooms are very scarce. Please indicate if you would be willing to share a twin-bedded room with another member.
Yes ..... No. .....

PLEASE MAKE RESERVATIONS NOTED BELOW: (Please print or type.)

First Choice ..... Hotel Arrival: ....., at ..... a.m. ..... p.m.

Second Choice ..... Hotel Departure: ....., at ..... a.m. ..... p.m.

Third Choice ..... Hotel

..... Single room @ $ .... Twin-bedded room @ $ .....

..... Double room @ $ .....

NAMES OF ALL OCCUPANTS: *ADDRESSES:*

....

....

....

MAIL CONFIRMATION TO: Signed: .....

Address: .....
City Zone State

80TH ANNUAL MEETING

Cleveland, Ohio, October 20–24, 1952

A HOUSING BUREAU has been organized for the 80th Annual Meeting of the A.P.H.A. in Cleveland, October 20–24. Since all requests for rooms are handled in chronological order, it is recommended that you send in your application as quickly as possible.

These rates are subject to change at any time. The list includes some residential hotels which may not have rooms available for conventions at all times.

PLEASE COMPLETE THE APPLICATION FORM ON PAGE 628 GIVING *ALL* INFORMATION REQUESTED.

HOTELS HOLDING ROOMS FOR A.P.H.A. AND RATES *

Hotel	*Single*	*Double*	*Twin-Bedded*
Alcazar Hotel	$6.50–8.00	$8.50–10.00	$ 8.50–12.00
Allerton Hotel	4.00–7.00 3.50 RW	6.50– 9.00	7.00–10.00 5.50 RW
Auditorium Hotel	4.00–7.00	6.00– 9.00	8.50– 9.50
Belmont Hotel	3.25–3.50	5.00– 5.75	4.25– 6.25
Bolton Square Hotel	3.50–5.00	5.50– 7.00	6.00– 7.50
Carter Hotel	4.00–7.50	6.00–10.00	8.00–12.00
Cleveland Hotel	4.50–8.00	7.00–10.00	10.00–15.00
Commodore Hotel	6.00–7.50	8.00–10.00	8.50–12.00
Hollenden Hotel	4.00–8.00	6.00–12.00	8.00–15.00
Lake Shore Hotel	5.00 up	8.00 up	8.00 up
New Amsterdam Hotel	3.00–4.00	5.50– 6.00	6.00– 7.00
Olmsted Hotel	3.75–6.00	6.50– 9.00	7.50– 9.50
Park Lane Villa	5.00	6.00	7.00– 8.00
Quad Hall Hotel	3.00–6.00		6.00–10.00
St. Regis Hotel	3.00–4.00	5.00– 8.00	5.00– 8.00
Sovereign Hotel	5.00–6.00	6.00–10.00	6.00–12.00
Statler Hotel	4.50–9.00	7.50–10.50	9.00–14.00
Stockbridge Hotel	3.00	5.00	6.00
Tudor Arms Hotel	4.50 up		7.00 up
Wade Park Manor	5.50 up	7.50 up	8.50 up
Westlake Hotel	5.00–6.00	8.00– 9.00	9.00

* Parlor suites available. Rates on request.

EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

POSITIONS AVAILABLE

Medical Director: must be eligible for Wisconsin medical license and have training and/or experience in public health administration, preferably an M.P.H. degree. Generalized program; excellent quarters; laboratory; exceptional staff of 16. Salary $9,000 plus travel, vacation, etc. Active program could be extended further by a capable director. Opportunity for an M.D. with initiative. Director will have backing and support of a strong and interested Board. Write: Eau Claire City-County Health Dept., Safety Bldg., Eau Claire, Wis.

Public Health Physician: Generalized public health; industrial hygiene physician; MCH; **other specialty services** and **Local Health Service Physician.** Several positions open at state and local level. Salary dependent upon training and experience; range $7,200–9,600 per year plus official travel and subsistence when away from official station. State retirement plan and generous annual and sick leave provisions with pay. Write: R. H. Hutcheson, M.D., Commissioner, State Dept. of Public Health, Nashville, Tenn.

We are in the process of constructing the fourth state tuberculosis hospital (not a sanitarium) to be completed within 2 years—220 beds. **Complete staff** is being recruited at this time. Salary range, from resident to medical director, $1,200–9,600. Write: Chairman, Board of Trustees. State Tuberculosis Hospitals, c/o Commissioner, State Dept. of Public Health, Nashville, Tenn.

Director, Butte County Health Department. $753–939. California license required. Write: Mr. R. E. Hocking, Administrative Officer, Butte County Court House, Oroville, Calif.

Director of Maternal and Child Health and Crippled Children's Services: Washington State; well established program and good staff; salary range $8,676–10,368 per annum including usual merit system provisions and retirement plan. Eligibility for licensure in Washington, M.P.H. degree, and 3 years' experience in public health or related work required. Write: Dr. J. A. Kahl, State Director of Health, 1412 Smith Tower, Seattle, Wash.

Health Officer: for newly created Egyptian Health Dept., located in the "Little Egypt" section of Southern Illinois and serving the Counties of Gallatin, Saline, and White; population 64,173. Position open at once. Candidate should be prepared to create and maintain a good program of local health services and should have capacity for excellent public and human relations. Salary up to $11,000 depending on experience and training. Write: Mr. Horace Brown, Secretary, Egyptian Board of Health, Shawneetown, Ill.

Deputy Health Commissioner: for well established health department in county of 80,000. M.P.H. required. No experience necessary. Salary open.

Medical Social Consultant: for well established health department in county of 80,000. Master's degree required. No experience necessary. Salary open. Write: Dr. Murray Grant, Health Commissioner, Cattaraugus County Health Dept., Olean, N. Y.

Medical Social Consultant with maternal and child health service of Denver Department of Health and Hospitals, administratively part of agency social service department. Works directly with medical director of service, supervised by director of social service. Qualifications: degree in social work, 3 years' social work experience in medical program.

Medical Social Worker: for tuberculosis ward program in Denver general hospital. Supervision available. Qualifications: completion of graduate training in medical or psychiatric social work. Salary range $245–400 per month. Write: Personnel Office, Room 408, City and County Bldg., Denver, Colo.

Dentist: To perform and be in charge of work involving the dental treatment of school children and other patients in a city dental clinic being established. Salary range $6,010–7,090. Write: Personnel Office, City Hall, Dearborn, Mich.

A Dental Educator: for city public health department, preferably with elementary school teaching and dental hygienist experience. Present salary range $269 to $319 per month for 10 months;

automatic salary increases; semi-annual cost-of-living salary adjustments; $25 per month mileage allowances; state-wide retirement program. Write: Personnel Division, City Hall, Madison 3, Wis.

Junior or Associate Bacteriologist: male or female. Capable of doing milk, water, and routine serological and other work usually done in health department laboratory. North Carolina Merit System status required. Permanent position in well equipped laboratory. Write: J. H. Epperson, Health Officer, 300 E. Main St., Durham, N. C.

Bacteriologists – Serologists. Entering salaries $300, $250, or $200, depending on amount of experience. Write: Merit System Supervisor, Box 939, Santa Fé, N. M.

Public Health Engineer meeting A.P.H.A. educational requirements and eligible for Connecticut licensure, to direct all work in environmental sanitation in city health department. Salary dependent upon training and experience. Write: Dept. of Public Health, Waterbury, Conn.

Sanitarian: City of Poughkeepsie, N. Y.; population 40,000. Base salary $3,800–4,520 plus 14 per cent cost-of-living increase; annual increments, $145; salary may start above minimum, depending upon qualifications; Civil Service position. Applicant must be eligible under New York State Sanitary Code qualifications for Assistant Sanitarian. Retirement benefits; adequate sick leave and vacations; car provided. Write: **Box S-13,** Employment Service, A.P.H.A.

Sanitarian: To carry on a broad program of community sanitation as a staff member of a health department serving a city of 71,000. Salary $315–375 per month plus hospital and surgical insurance and retirement benefits. Write: Commissioner of Health, 730 Washington Ave., Racine, Wis.

Sanitarian, I: Desirable experience, training, and references. State Retirement System. Must own car; 8 cents per mile allowance. Salary range $281–341. Write: H. A. Dahlsrud, M.D., Health Officer, 317 - 5th St., Colusa, Calif.

Director of Education: general hospital, 500 bed capacity—140 students. Degree in nursing education required. Public health experience desirable. Salary $4,200 per annum. Write: Miss Beatrice McGavin, Director of Nursing, Baroness Erlanger Hospital, Chattanooga 3, Tenn.

A national trade association noted for its high professional standing in the public health field has an opening for a **young man** soundly trained and **with experience in sanitation or health education** or both. A unique opportunity, with an attractive future. Write: **Box S-15,** Employment Service, A.P.H.A.

Health Education Supervisor: for Washington State Training Center, Bremerton, Wash. Well rounded health department with excellent staff working in both urban and rural areas. Salary range $3,936–4,692 per annum with usual merit system provisions and retirement. M.P.H. degree in Health Education and 3 years' experience required. Write: Dr. J. A. Kahl, State Director of Health, 1412 Smith Tower, Seattle, Wash.

Nurses: for generalized program in combined city-county unit, 270,000 population. Retirement plan, vacation and sick leave; $45 a month travel allowance on own car. Requirements: registration in Kansas, completion of a year's approved program of study in public health nursing, nurses with or without experience considered. Salary range $275–313 per month. Public health training center. Write: M. Leon Bauman, M.D., Director, Wichita-Sedgwick County Dept. of Public Health, 407 City Bldg., Wichita 1, Kans.

Public Health Nurse: for generalized program in rural area, Southern California. Car furnished. Salary $326 per month. Write: Thomas E. Patton, M.D., Imperial County Health Dept., El Centro, Calif.

Public Health Staff Nurse: Generalized program—staff of 16 includes 7 R.N.'s. Salary scale $235–285 per month. Travel allowance, vacations, sick leave, etc. Excellent quarters and working conditions; 5 day week. Write: Eau Claire City-County Health Dept., Safety Bldg., Eau Claire, Wis.

Public Health Nursing Supervisors and Consultants with public health training. Salaries from $225 to $365. Established personnel policies; 40 hour week; opportunities for further training.

Public Health Nurses needed for generalized service in local health departments. Individualized placement. Salaries from $220 to $250; travel allowance; vacation allowance; sick leave; 40 hour week; opportunities for further training. Write: John I. Hogue, Merit System Supervisor, 313 Wallace Bldg., Little Rock, Ark.

Staff Nurse: for generalized program in rural resort area of Southwestern Michigan. Starting salary for nurse with desired qualifications $3,120; $60 increase at end of 6 months and semi-annual salary increment and thereafter; travel allowance $36 a month plus 4¢ a mile; 4 weeks vaca-

tion; Social Security and other liberal personnel policies. Active public health training center. Write: A. B. Mitchell, M.D., Medical Director, Van Buren County Health Dept., Paw Paw, Mich.

Public Health Nurses with P.H.N. course. Generalized program, including school nursing. University training center. Starting salary $290 per month; 5 day week; liberal personnel policies. County car furnished, or 7¢ per mile. Write: Personnel Department, Kern County Court House, Bakersfield, Calif.

Staff School Nurse: for small, well organized school health department, loveliest spot on Pacific Coast. Beginning salary $3,350–3,600 depending on training. Work 9 calendar months; 2 weeks vacation Christmas, one week Easter; 35 hour week. Annual increment for 10 years up to $5,500; tenure after 3 years. B.A. and P.H.N. degrees. Own car. Send photograph, age, degrees, training and experience, marital status, number of children. Write: **Box Mi-5,** Employment Service, A.P.H.A.

Staff Public Health Nurse, I in large university town. Salary range now $280–335 per month; automatic salary increases; cost-of-living salary adjustments semi-annually; $35 per month mileage allowance; state-wide retirement program. Write: Personnel Division, City Hall, Madison 3, Wis.

Public Health Nursing vacancies, City of Phoenix. Salary $276–345; may start on a higher step, depending on experience. Age limit 21–40. Public health nursing experience and public health nurse training required. Secure application blanks from: Leroy J. Brenneman, Personnel Director, Personnel Dept., City Hall, Phoenix, Ariz.

Public Health Nurses for rural county near metropolitan area. Organized health department; generalized service. Salary $3,840–5,040; automatic annual increment $200; transportation costs included. Five day week; retirement and accumulative sick leave benefits.

Physical Therapist, registered. Physical therapy service in homes; also physical therapy clinics working closely with orthopedic treatment clinics and diagnostic clinics. Provides instruction to public health nurses. Salary $3,260–4,340; annual increment $180; car provided.

Staff Sanitary Engineer: Graduate university degree engineering; 2 years' experience in sanitary or public health engineering. Work under general supervision of director of sanitation. Salary range $4,620–5,820; annual increment $240; car provided.

Dental Hygienist: Graduate of approved dental hygiene school, licensed or eligible for New York State license; 1 year experience. Field school program. $3,440–4,340; car provided. Write: Dr. Philip J. Rafle, Commissioner, Suffolk County Dept. of Health, Riverhead, Long Island, N. Y.

Public Health Physician—as health officer of a newly established county health department; county of 20,000 on Mississippi River in Northwestern Illinois. Salary range $7,200–$9,000. Qualified health officer may start above minimum. Write: G. Alzeno, D.D.S., President, Jo Daviess County Board of Health, Stockton, Ill.

Psychiatrist—with 3 years' experience in clinical psychiatry and eligible for certification in psychiatry by the American Board of Psychiatry and Neurology. Salary range $110.50–138.30 per week. Liberal personnel policies including 4 weeks each of sick and annual leave and excellent retirement plan. Write: Personnel Officer, Dept. of Health Annex, South Burlington, Vt.

Health Officer, Clackamas County, Oregon City, Oregon; 15 miles from Portland in beautiful Willamette Valley; population 87,000. Starting salary $8,400–9,600 plus travel expenses. M.P.H. degree and eligibility for licensure in Oregon required. Write: H. M. Erickson, M.D., State Office Bldg., Portland 1, Ore.

Public Health Nurse—for generalized program in newly organized county health department, in rural area of Northern California. Salary $300 per month, with $100 per month travel allowance. Three weeks vacation with pay; retirement system. Write: Director, Public Health Nursing, Mendocino County Dept. of Public Health, 880 N. Bush St., Ukiah, Calif.

POSITIONS WANTED

Medical student with **M.S.P.H. in Sanitary Science** seeks summer employment. Navy Hospital Corps, teaching, camping experience. Unusual qualifications for several fields of public health and sanitation, industrial hygiene, camp intern. Age *28,* married. Resumé sent on request. Write: **Box S-11,** Employment Service, A.P.H.A.

Director of Milk or Food Division. Eight years public health experience.

B.S., M.P.H. Age 35. Prefer Pacific Coast area. Write: **Box S-14,** Employment Service, A.P.H.A.

Bacteriologist: A.B., M.S. in Bacteriology; 2 years study toward Ph.D. in Pharmacology. Two years research in chemotherapy of parasitic infections. Versed in Warburg techniques. Married, veteran, Sigma Xi, many publications, age 25. Desire position as instructor or research associate. Available July, 1952. Write: **Box L-25,** Employment Service, A.P.H.A.

Health Educator: M.P.H. Two years' experience with voluntary health agency. Excellent command of French; moderate ability in Spanish. Available July, 1952. Write: **Box HE-43,** Employment Service, A.P.H.A.

Parasitologist, Bacteriologist: B.S. (Zoology, Chemistry), M.S., Ph.D., with wide interests, desires teaching or laboratory position with opportunity for research. Teaching experience, field work in parasitology. Sigma Xi, professional societies. Available July, 1952. Write: **Box L-24,** Employment Service, A.P.H.A.

Public Health Administrator: Health educator; M. Sc.Hyg. in health education from eastern university. Woman. Expert community organization, state, area, and city basis. Would prefer opening with university affiliation, East or West. Write: **Box HE-41,** Employment Service, A.P.H.A.

Bacteriologist and Chief of Clinical Laboratories, equivalent to M.S. degree in bacteriology and chemistry. Thirteen years' experience in general hospitals and clinics. All experience in supervisory capacity. Desire permanent position of high caliber in South, Midwest or West. Write: **Box L-26,** Employment Service, A.P.H.A.

All communications should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

OPPORTUNTIES WANTED

WANTED—Opportunities for group of well qualified Public Health Physicians and Dentists, Public Health Nurses, Health Educators, Statisticians, Sanitary Engineers and Laboratory Workers. Candidates available for administrative, academic and staff appointments. All negotiations strictly confidential. Please outline your requirements and credentials of qualified candidates will follow. THE MEDICAL BUREAU (Burneice Larson, Director) Palmolive Building, Chicago.

OPPORTUNITIES AVAILABLE

WANTED—Public Health Physicians and Dentists, Health Educators, Public Health Nurses, Nutritionists, Public Health Laboratory Personnel, Sanitary and Industrial Engineers for administrative, academic and staff appointments. Opportunities in all parts of America including countries outside continental United States. All negotiations strictly confidential. Please send for our ANALYSIS FORM so that we may prepare an individual survey of opportunities in your particular field. THE MEDICAL BUREAU (Burneice Larson, Director) Palmolive Building, Chicago.

NEWS FROM THE FIELD

CONGRESSIONAL HEARINGS ON WATER-BORNE FLUORIDES

The House of Representatives Select Committee To Investigate the Use of Chemicals in Food Products concluded hearings on March 6 with extended testimony on fluoridation of public water supplies. Among the agencies heard in support of fluoridation were the U. S. Public Health Service, the National Research Council, the American Dental Association, the State and Territorial Health Officers Association, represented by John D. Porterfield, M.D., Secretary, and the American Public Health Association. David B. Ast, D.D.S., M.P.H., Director of the Bureau of Dental Health of the New York State Department of Health, represented the American Public Health Association at the hearing on March 6. Dr. Ast has been in charge of the Newburgh-Kingston, N. Y., experiments during which the public water supply of Newburgh has been fluoridated for the last seven years and Kingston has been used as a control community.

Believing that readers of the *Journal*, especially in communities where fluoridation is under attack, will welcome these data, the *American Journal of Public Health* reprints the statement made by Dr. Ast on behalf of the Association:

Prior to 1944 several epidemiological studies determined:

1. A number of potable water supplies in different parts of the United States naturally contained fluorine in varying concentrations from 0.05 p.p.m. to more than 10 p.p.m.
2. When the fluorine concentration was in excess of 1.0 p.p.m., mottling of the enamel of the teeth of some of those ingesting such water during the years of tooth development resulted.
3. The degree of mottling, i.e., very mild, mild, moderate or severe, and the extent in terms of numbers involved were directly proportionate to the concentration of fluorine in the potable water consumed during the years of tooth development.
4. No deleterious effects were reported from the ingestion of water-borne fluorides other than mottled enamel.
5. Where the fluorine content was approximately 1.0 p.p.m., children ingesting such water during the years of tooth development had:
   a. Sixty per cent less dental caries experience in their permanent teeth than comparable aged children in fluoride-free areas.
   b. There were six times as many children completely caries-free as compared with those in fluoride-free areas.
   c. Seventy-five per cent less first permanent molar loss than in comparable aged children in fluoride-free areas.
   d. All of these benefits without any disfiguring mottled enamel.

In June, 1944, the New York State Department of Health initiated a study to determine whether the supplementation of the fluoride ion in communal water supplies having less than the optimum (approximately 1.0 p.p.m. F.) would have the same beneficial effects as noted in areas where this concentration was found naturally in the potable water. Studies were subsequently initiated in Grand Rapids, Mich.; Brantford, Ontario; Sheboygan, Wis.; Evanston, Ill.; and other areas.

The Commissioner of Health for New York State appointed an Advisory Committee to assist the State Department of Health in planning the various types of tests which would be necessary to determine the efficacy and safety of such a program. This committee consisted of:

Dr. Katherine Bain, Director, Division of Research in Child Development, Children's Bureau, Washington, D. C.
Dr. John Caffey, Roentgenologist, The Babies Hospital, Columbia Presbyterian Medical

Center, and Professor of Clinical Pediatrics, College of Physicians and Surgeons, Columbia University, New York, N. Y.

Dr. William J. Gies, Professor of Biological Chemistry, College of Physicians and Surgeons, Columbia University, New York, N. Y.

Dr. Harold C. Hodge, Professor of Pharmacology, University of Rochester, Rochester, N. Y.

Dr. Philip Jay, Assistant Professor of Oral Pathology, University of Michigan, Ann Arbor, Mich.

Dr. Samuel Z. Levine, Pediatrician in Chief, New York Hospital, New York, N. Y.

Dr. Maurice Pomeranz, Attending Roentgenologist, Hospital for Joint Diseases, New York, N. Y.

This committee, with two changes, has been functioning continuously from 1944 through the present period. The two changes were: Drs. Jay and Pomeranz have been replaced by Dr. Basil G. Bibby, Director of the Eastman Dental Dispensary, Rochester, N. Y., and Dr. John W. Fertig, Professor of Biostatistics, School of Public Health, Columbia University.

Two comparable cities, Newburgh and Kingston, N. Y., each with a population of approximately 30,000, were selected for the study and control areas respectively. The potable water in each city had from 0.05 to 0.1 p.p.m. F. naturally.

The study was planned on a 10 year basis because it was presumed that any potential dental benefits which may accrue would be the results of the effects of ingested water-borne fluorides on the developing and calcifying teeth. The crowns of the permanent teeth are all, with the exception of the third molars, calcified by about age 8 so that it would take about 10 years to study the full benefits of such a program.

The types of examination which were agreed upon were:

1. Dental examinations for all of the elementary school age children in both cities, about 3,200 children in each city.

2. Medical examinations, including complete physical examinations, x-ray study of the hands, forearms, and legs, and blood and urinalyses.

These medical examinations were initially made for a group of 500 children in each city with an age distribution of 100 under age 1, 100 age 1, 200 ages 2–5, and 100 ages 5–9. During each of the first 3 years of the study an additional group of infants under 1 year of age was enrolled.

In addition to these examinations special opthalmological and otological examinations were made for smaller groups of children annually.

All of these types of examinations, both medical and dental, were first made in Newburgh in 1944–1945 to obtain a base line prior to fluoridation of Newburgh's water supply, and in 1945–1946 in Kingston for the base line data. The dental examinations have been made on an annual basis in each city thereafter and the medical examinations during the early years of the study were made two and three times a year. They are now made annually.

At the last medical examinations made in 1950–1951 there were 613 children in Newburgh and 482 children in Kingston, a little over 1–15 years of age in the study; for the dental examinations, 2,905 children in Kingston, and 3,344 in Newburgh aged 4–14.

All of the x-ray films, of which several thousand are taken each year, are read by Dr. John Caffey, a member of the Advisory Committee and the author of a leading textbook—*Pediatric X-ray Diagnosis*.

The data for the medical examinations for 7 years in Newburgh and 6 years in Kingston show no differences in the findings among the children studied in Newburgh and Kingston.

It is considered that the earliest sign of chronic fluoride toxicity would be manifested in the teeth and in the bones, and especially in the bones during the years of most rapid growth and develop-

ment. A large number of children have been studied who have had fluoridated water from birth to early childhood and whose mothers drank fluoridated water during the prenatal period.

X-ray study of the hands, forearms, and legs of these children reveals no differences in the children in Newburgh and Kingston; maturation is neither accelerated nor retarded.

Blood counts and hemoglobin determinations as well as urinalyses reveal no differences in the study and control groups.

The clinical examination which is made by a Board-qualified pediatrician consists of a complete physical examination with special attention to the skin, nails, and thyroid gland. These examinations reveal no differences in the children in the two cities.

With reference to the effects of ingested water-borne fluorides on adolescents and young adults we note McClure's work in studying fluoride excretion, and height, weight, and bone fracture experience among high school boys and young adult males coming from natural fluoride areas and fluoride-free areas.

In regard to urinary excretion of fluorine, McClure states "An efficient urinary elimination of fluorine appears to be characteristic of individuals residing in certain fluoride areas of the United States where the drinking water contains 0.5 to 5.0 p.p.m. F. The metabolism of fluorine under these conditions seems to be a normal function of the human body and seems characterized by a condition approaching metabolic equilibrium, at least in the adult organism."

With regard to height, weight, and bone fracture experience he reported no differences among those studied in comparable fluoride and fluoride-free areas.

The analysis of the dental examinations shows a continuing downward trend in dental caries experience in the permanent and deciduous teeth of the children in Newburgh, as compared with those in Kingston.

Among the 6–12 year old children examined at the outset of the study the Newburgh children had a 2 per cent higher dental caries experience rate for their permanent teeth as compared with Kingston. After five years of fluoride experience the Newburgh rate was 40 per cent lower than that in Kingston (Table 1).

In regard to the deciduous teeth the Newburgh children aged 5–8 had 5 per cent more dental caries experience than the same aged children in Kingston. However, after 5 years of fluoride experience the Newburgh rate was 35 per

TABLE 1

Age-Adjusted DMF† Rates Per 100 Erupted Permanent Teeth of Children Ages 6–12 Inclusive, in Newburgh, N. Y.‡ (Fluoride City) and Kingston, N. Y. (Control City), 1944–1951*

City	Year	Number of Children Examined	DMF per 100 Erupted Permanent Teeth	Relative Difference
Kingston	1945–1946	2,553	20.2	Newburgh rate 2 per cent higher than Kingston rate
Newburgh	1944–1945	2,810	20.6	
Kingston	1950–1951	2,410	21.7	Newburgh rate 40 per cent lower than Kingston rate
Newburgh	1950–1951	2,709	13.0	

* Age-adjusted to the permanent tooth population in Kingston in 1945–1946.
† DMF includes teeth decayed, missing (lost subsequent to eruption) or filled.
‡ Sodium fluoride added to water supply beginning May 2, 1945, to increase concentration to 1.2 p.p.m.

TABLE 2

def Rates Per 100 Deciduous Teeth Present, in Children Ages 5–8 Inclusive, in Newburgh, N. Y.† (Fluoride City) and Kingston, N. Y. (Control City), 1944–1951*

City	Year	Number of Children Examined	def* per 100 Deciduous Teeth Present	Relative Difference
Kingston	1945–1946	1,345	35.3	Newburgh 5 per cent higher def rate than Kingston rate
Newburgh	1944–1945	1,426	37.0	
Kingston	1950–1951	1,414	30.8	Newburgh 35 per cent lower def rate than Kingston rate
Newburgh	1950–1951	1,643	20.1	

* def includes deciduous teeth decayed, indicated for extraction or filled.
† Sodium fluoride added to water supply beginning May 2, 1945, to increase concentration to 1.2 p.p.m.

TABLE 3

Children with Caries-Free Deciduous Cuspids, First and Second Molars in Children Ages 5–6 Inclusive, in Newburgh, N. Y. (Fluoride City) and Kingston, N. Y. (Control City), 1944–1951*

City	Year	Number of Children †	Number of Children ‡ Caries-Free	Per cent Children ‡ Caries-Free	Relative Difference
Kingston	1945–1946	602	132	21.9	Newburgh rate 17 per cent lower than Kingston rate
Newburgh	1944–1945	677	123	18.2	
Kingston	1950–1951	524	157	30.0	Newburgh rate 64 per cent higher than Kingston rate
Newburgh	1950–1951	730	359	49.2	

* Sodium fluoride added to water supply beginning May 2, 1945, to increase concentration to 1.2 p.p.m.
† Children with all 12 specified teeth present.
‡ Children with all 12 specified teeth caries-free.

cent lower than that in Kingston (Table 2).

A further analysis of the potential protective action of ingested fluoridated water at approximately 1.0 p.p.m. F. was made to determine the number of 5 and 6 year old children who had been reared on Newburgh's fluoridated water from birth. Since at ages 5 and 6 the deciduous central and lateral incisors begin to be exfoliated naturally, it was arbitrarily determined that children with all of their deciduous cuspids, first and second deciduous molars present and caries-free were considered completely caries-free. This is a reasonable assumption to make, because one does not usually find caries in the central and lateral incisors without finding it also in the molars, since the molars are the teeth most susceptible to caries.

In the initial examinations, Newburgh had 17 per cent fewer children aged 5 and 6 with all of their deciduous cuspids, first and second deciduous molars completely caries-free than did Kingston. In the 1950–1951 examinations, after 5 years of fluoride experience, Newburgh had 64 per cent more such caries-free children than did Kingston (Table 3).

In November, 1950, the American Public Health Association, after extended consideration by its Committee on Research and Standards, adopted the following Resolution:

WHEREAS, accumulated evidence indicates a sound basis for the fluoridation of public water supplies for the partial control of dental caries, therefore be it

RESOLVED: that this procedure be recommended as a safe and effective method for reducing the prevalence of dental caries.

In January, 1951, the Commissioner of Health brought to the attention of the New York State Public Health Council the data from the Newburgh-Kingston Study and the corroborating evidence from studies elsewhere in the country. While the Newburgh-Kingston Study was not yet completed, the evidence was so encouraging that the Public Health Council approved a statement of policy to the effect that the fluoridation of public water supplies is recommended, subject to the provision of adequate control measures in accordance with the specified requirements of the State Commissioner of Health and in accordance with the Sanitary Code.

This committee has already heard the recommendations for water fluoridation by official and non-official health agencies and national health organizations in the United States. The unanimity with which the many agencies and organizations concerned with the health of the people of this country have recommended water fluoridation as a safe and effective public health procedure to control dental caries should serve as strong evidence that the facts have been adequately reviewed. We know of no public health procedure which has had the extensive and comprehensive study on human populations that water fluoridation had before it was recommended as a satisfactory public health procedure.

WHO NEWS

Some Random Disease Control Notes

Malaria—"The Ancient Curse" is a 50 minute, dramatized documentary film of Thailand's successful 2 year malaria campaign in the Chiengmai Valley. It tells how the *Anopheles* mosquito was found, how DDT spraying operations were carried on in homes and public buildings, how malaria transmission was stopped, with the result of a great increase in the prosperity of this rice-growing region. The film will be used to acquaint the public of all countries with the human suffering and economic loss caused by the disease and to show what can be done to check malaria through coöperative efforts. The Thai program was a joint project of WHO, UNICEF, and the Thai Ministry of Health, which is extending the campaign to other Thai areas.

The first WHO-aided malaria control project in the Philippines was begun on the island of Mindoro in February. Directing the WHO team is Dr. G. Sambasivan, malariologist, who led the Thailand demonstration project. This too is a rice-growing area, in which malaria control is expected to increase food production. It is believed that, through spraying operations, more than 50,000 persons will be protected within 18 months. Once this pilot project has been completed, the Philippine Government will take over the work. It is estimated that an efficient and inexpensive campaign can be carried out through the Philippines.

After a 2 year WHO-assisted pilot project in North Afghanistan, antimalaria campaigns are under way in 10 new areas of the country. The pilot project trained a nucleus of Afghan personnel for carrying on the extended program. The Afghan Government has also requested WHO assistance in organizing a National Malaria Institute for teaching and research and for coördinating the various antimalaria projects of the country.

Insecticide Shortage Eased

A working party convened by the UN Economic and Social Council in February to consider the critical short-

age of insecticides found that the shortage was less serious than it had been in 1951; in fact, that "a significant shortage does not exist." For the future, large increases in DDT production are probable in the major producing countries. In addition, increases are likely in 1953 in Argentina and the Union of South Africa. In Ceylon, Egypt, India, and Pakistan, manufacturing plants will be ready for production in 1954, with projects also under consideration in Brazil and Peru. Increased demand for both agricultural and health needs is also expected.

Tuberculosis—A mass BCG vaccination program was begun in Iran in February by the government with the assistance of WHO and UNICEF. WHO has appointed Dr. M. Gauthier of Paris as BCG consultant to the WHO team. He was recently engaged in a similar project in Tunisia, where 600,000 persons were tested. The BCG vaccine used at the outset was flown from the Pasteur Institute in Paris, but the facilities of the Teheran Pasteur Institute are being enlarged so that the vaccine can be produced there.

The second of three tuberculosis training centers in India has recently been opened in New Delhi. WHO's regional office for Southeast Asia reports that the center has one of the best and most up-to-date installations in the country for demonstrating and teaching modern x-ray and laboratory techniques. The x-ray and laboratory equipment was provided by UNICEF and its installation was supervised by WHO experts. WHO is furnishing an international team of bacteriologist, epidemiologist, laboratory and x-ray expert, and public health nurse to work with a similar local team of the Tuberculosis Association of India.

The first antituberculosis center set up at Istanbul with WHO assistance completed a year's work in February, 1952. It reports 60,000 chest x-rays during the year, 10,000 BCG vaccinations given, and approximately 450 doctors and 500 nurses participating in advanced courses on the medical and social aspects of tuberculosis. Help has also been given in organizing antituberculosis services at the University, setting up a treatment center for acute tuberculosis cases among infants; in developing a health education program in schools; and in drawing up a plan for the consideration of the Turkish National Assembly.

An international WHO-UNICEF team is in charge of a campaign in Aden, Arabia, to examine 40,000 children and vaccinate with BCG serum those not affected with tuberculosis.

Dr. H. Moller, BCG adviser at WHO's regional office for the Eastern Mediterranean at Alexandria, recently spent several weeks in Ethiopia planning with government officials for a mass BCG vaccination program to be undertaken there early in 1953. The plan is to have three international teams work for 2 years, during which time they will test and vaccinate more than half a million children. The project, in which UNICEF participation is expected, will also train local teams.

Health in the Newest Country

Libya is the newest addition to the world of nations, having achieved independent status early in 1952. A group of UN Technical Assistance experts, among them Dr. D. K. Lindsay of WHO, has recently completed a 6 month survey of the country. Dr. Lindsay found the framework of a good health service in Libya—in fact, a better health organization than in many wealthier countries.

Among the chief health problems is infantile gastroenteritis, from which it

is believed about a quarter of all babies die; an infant and child health program is indicated, with the training of women, who are presently isolated in the community, to carry it out.

Trachoma is the most important eye disease. About 30 per cent of the people show signs of present or past eye inflammation; 1 per cent are totally blind, and 10 per cent have seriously defective eye vision.

Tuberculosis is increasing in the country. Mass radiography and BCG vaccination are recommended.

World Health Statistics

The United Nations *Statistical Yearbook 1951* became available early in 1952. It gives a wealth of statistical data that are indispensable as a background for understanding world health problems. Populations per physician, for example, range from 750 in the United States and Switzerland and 900 in Canada and New Zealand to 63,000 in Iran and 170,000 in Ethiopia.

Infant mortality rates (1949) vary from 23.2 to 169. A hopeful trend, however, is indicated by the fact that in 1930 three countries reported a rate beyond 200, and 23 beyond 100, but by 1949 none was over 200 and the number over 100 had decreased to 8. The same type of disparities among nations are found in life expectancy, food consumption, and many of the other factors related to health. Columbia University Press, International Documents Service, 2960 Broadway, New York 27. $7.50 cloth, $6.00 paper.

WHO Newsletter Dramatizes Program

The *WHO Newsletter* has been mentioned in these columns before. But the special New Year issue of 1952 (Vol. 5, No. 1, according to a new numbering system) is particularly worthy of note. It summarizes the outstanding activities of WHO for each month of 1951, summarizes *The Cost of Sickness and the Price of Health*, and tells dramatically, often with photographs, some of the stirring stories of WHO activities. "Nine Smart Girls," for example, is the story of a pilot project in which Egyptian social work students went into homes and communities as health educators to stimulate the use of limewash for houses; clean streets; better use of clinics; DDT spray for insects, etc. How they pioneered the road from suspicion to trust to demand for their services is interestingly told. Also included are extracts from two of the six addresses given at the International Health Session of the 79th Annual Meeting of the American Public Health Association in San Francisco. The *Newsletter* contains excellent background material for feature articles and for developing interest in world health. Public Information Office, WHO, United Nations, N. Y., has copies of the *Newsletter* for limited distribution.

New Zealand School Dental Nurses

A WHO fellowship has contributed a record of experience to a "subject of world-wide controversy"—the use of school dental nurses. *Experiment in Dental Care: Results of New Zealand's Use of School Dental Nurses* is Number 4 in WHO's Monograph Series. J. T. Fulton, D.D.S., dental service adviser, U. S. Children's Bureau, in a 40 day tour of New Zealand on a WHO fellowship, studied the dental condition of more than 4,000 children. In New Zealand a large part of dental treatment of school children is performed in school dental clinics operated by dental nurses after a 2 year training period. Dr. Fulton's conclusions, briefly, are that "the prevalence of dental caries is high in the average New Zealand school child, but much of it has been treated" and that, judged on whether the program saved teeth, "the quality of the School Dental Service in New Zealand is high." New Zealand, like nearly every other country,

neither has nor is likely to have shortly, enough dentists for children's needs and thus finds the training of supplementary personnel logical and necessary. The Monograph is in English only, $1 or Sw. fr. 4. Geneva, Switzerland.

Chisholm Inspects WHO's World

Dr. Brock Chisholm, Director General of WHO, returned to Geneva late in April after completing a 23,000 mile swing around the world. In 11 countries he inspected projects undertaken with WHO help and discussed international health programs with the governments concerned. He was accompanied by Assistant Director-General in charge of Administration and Finance, Milton Siegel, of the United States.

At a press conference in New York City on his way back to Geneva, Dr. Chisholm reported that a number of countries were getting from the Technical Assistance Program all the help that could presently be absorbed in the health field. The almost universal exception is in the field of environmental sanitation, where much more guidance and technical assistance is needed. Particularly in the control of malaria, schistosomiasis, and other tropical diseases, environmental sanitation and health education are important and still inadequate.

Among other chief problems is nutrition, particularly in India, which does not raise enough to feed its own people. Less acute but serious is the food problem in Ceylon, where population grows at a faster rate than land is put under cultivation.

Dr. Chisholm also announced a new program of coöperation with CARE, now providing packages of medical supplies to be used in areas where WHO provides the assistance of technical staff.

RESEARCH ON DUCK FARM POLLUTION

The New York State Water Pollution Control Board announces the inauguration of a research program to study ways eliminating the pollution of natural waters by wastes from duck farms. The studies will be financed by an appropriation of $12,000 from the Long Island Duck Growers Marketing Cooperative, Inc., with the New York State Department of Health supervising the work. The Pollution Control Board calls attention to the fact that at present no satisfactory method has been developed for elimination of the pollution. The Board believes, however, that it will be possible to develop adequate methods in the time granted to the duck growers' organization—to January 1, 1953. (See *A.J.P.H.* 40, 8:923–928 (Aug.), 1950, for a discussion of the problem.)

ANOTHER OHIO CONSOLIDATION

The City of Uhrichsville in Ohio has contracted with Tuscarawas County for full-time health service. This means that this entire county of 70,000 persons is under a unified health administration. The health officer is Roy D. Hildenbrand, M.D.

DR. SCHEELE REAPPOINTED

Upon the nomination of President Truman, Leonard A. Scheele, M.D., has been confirmed by the U. S. Senate for reappointment as Surgeon-General of the United States Public Health Service for a 4 year term beginning April 6, 1952.

1951 BORDEN RESEARCH AWARDS

The Borden Company Foundation in 1951 made five Borden Awards of a gold medal and $1,000 for outstanding research in medical and related fields. Recipients and the Associations administering the awards are:

Edwin B. Astwood, M.D., research professor of medicine, Tufts College Medical School, for research in endocrinology with special reference to hyperthyroidism. Association of American Medical Colleges.

Daniel C. Darrow, M.D., professor of

pediatrics, Yale University, for contribution on disturbances in water and electrolytes. American Academy of Pediatrics.

Paul Gyorgy, M.D., professor of clinical pediatrics, University of Pennsylvania, for research on the nutrients contained in milk. American Institute of Nutrition.

Frances A. Johnston, Ph.D., associate professor of food and nutrition, Cornell University, for investigations in the field of iron and calcium metabolism and biochemistry. American Home Economics Association.

Thomas L. McMeekin, Ph.D., Eastern Regional Research Laboratory, U. S. Department of Agriculture, Philadelphia, for contributions to chemistry and utilization of milk proteins. American Chemical Society.

EMERGENCY PORTABLE LABORATORY

A portable clinical laboratory chest for use in improvised hospitals during emergencies has been developed by the Federal Civil Defense Administration, with sufficient supplies for 24 to 48 hours' operation. The most important tests that can be done by the emergency laboratory are examinations of blood and urine, important in view of the extensive burn and wound casualties that might be expected in a military emergency. Examination of spinal fluid, feces, and sputum is also possible. Total cost of the chest is about $125. Further information from FCDA, Health and Welfare Office, Washington, D. C.

MORBIDITY AND MORTALITY REPORTING

The National Office of Vital Statistics of the Public Health Service in January, 1952, began to issue a *Morbidity and Mortality Weekly Report*, which combines domestic morbidity data previously published in the weekly *Public Health Reports* and the *Weekly Morbidity Report*, and certain mortality data previously included in the *Weekly Mortality Index*. The *Index*, however, continues publication. Health agencies, libraries, and other organizations which have need for and wish to continue receiving these data should request them from the National Office of Vital Statistics, Washington 25, D. C. Requests from individuals should indicate how and to what extent the new publication is to be used.

IOWA'S THIRD COUNTY ORGANIZES

Late in 1951 the capital City of Des Moines organized a health department with a full-time medical health officer. By February, 1952, the state's director of local health services, C. L. Putnam, M.D., announced that the city and county had reached agreement for a city-county department, thus taking in the remaining 50,000 persons in Polk County outside of Des Moines. The health officer under whom this development came to pass is Abraham Gelperin, M.D., Dr.P.H.

RADIOLOGICAL PROTECTION

The National Bureau of Standards, U. S. Department of Commerce, has recently published two reports dealing with radiological protection. The first, *Recommendations of the International Commission on Radiological Protection and of the International Commission on Radiological Units, 1950* (Handbook No. 47), presents the most recently adopted radiation safety standards of the two international commissions. A section on protection against x-ray radiation is included.

The second, *Control and Removal of Radioactive Contamination in Laboratories* (Handbook No. 48), discusses the protection that should be taken in handling radioactive materials in laboratories, and emergency measures that should be adopted in event of accidents with radioactive materials. Copies of either report may be obtained from NBS at 15 cents each.

MEXICO TRAINS SANITARY ENGINEERS

Enrollment for the graduate course in sanitary engineering (see *A.J.P.H.* 41, 9:1203 (Sept.), 1951) to start in July, 1952, is now under way at the National University of Mexico. This class is the second to be enrolled at the University.

The first class will be graduated in June. Further information can be obtained from Eng. Alberto Ortiz Irigoyen, Encargado del Curso, Apartado 23-Bis, Mexico, D. F.

STUDY OF INDUSTRIAL HEALTH PLANS

The Health Information Foundation, New York, has undertaken a study of health plans in industry. Its purpose is to determine the role of such programs—their relationship to productivity, absenteeism, turnover, and other industrial relations factors. The study will include a survey of research already done in the field, to present an integrated picture of what has been done. Also in the plan are field investigations to study the relation of health programs as specified in labor-management contracts to the use made of them.

The study is expected to be completed within a year. Directing it is Sheldon G. Lowry, research assistant, Department of Sociology and Anthropology, Michigan State College.

HEALTH AWARD HONORS DR. CRUMBINE

The Kansas State Board of Health recently voted to establish a Samuel J. Crumbine medal to be awarded annually by the Kansas Public Health Association for outstanding service to Kansas in public health. The medal honors Dr. Samuel J. Crumbine, who won national fame as a health officer of Kansas from 1904 to 1923. He was best known for his action in 1909 banning the use of the common or public drinking cup.

SUMMER SESSIONS

Notice of the following 1952 summer sessions related to public health had been received by March 30. No attempt has been made to get a complete census of special summer sessions. Those that are suitable for *Journal* notice should be sent to the Editor preferably by February 28 and not later than March 31 annually.

Institute for Annual Review of United Nations Affairs, June 23–27, New York University. Day sessions at UN Headquarters; evening sessions at the University. Especially useful for teachers of courses dealing with the UN and for representatives of organizations interested in the UN. Registration fee $20. Professor Clyde Eagleton, New York University, Washington Square, New York 3.

Summer School of Alcohol Studies, Yale University, Laboratory of Applied Psychology (10th Annual), July 7–August 1. A broad orientation for the more effective understanding of the functions of beverage alcohol in our society and of the many problems related to its use. Tuition including room and board, $250 for ministers, physicians, social and welfare workers, probation officers, teachers, nurses, and certain classes of government workers; $425 for others. Summer School of Alcohol Studies, 52 Hillhouse Ave., New Haven, Conn. Protestant clergymen and church workers, Department of Pastoral Services, National Council of Churches, 297 Fourth Ave., New York 10.

Institutes on Family Life Education—Sponsored by the American Social Hygiene Association—conducted by Roy E. Dickerson, executive secretary, Cincinnati Social Hygiene Society.

University of New Hampshire—Durham, June 23–28.

University of Cincinnati—Cincinnati, June 30–July 11.

Indiana University, Bloomington, July 14–19.

Kansas State Teachers College, Emporia, July 21–26.

Further information should be requested directly from each university.

Special Program in Food Technology, Massachusetts Institute of Technology, June 16–July 3. Among applicants to

whom preference will be given are government workers in food control or nutrition. Tuition $100; room $18 a week. Apply to Professor Bernard E. Proctor, Department of Food Technology, Cambridge 39, Mass.

Community Nutrition Institute, Syracuse University, June 16–28. Study of advances in nutrition, with emphasis on the practical aspects of effectively integrating them into the community health program. Planned primarily for health officers, public health nurses, social workers and dentists, clinical dietitians, health educators, etc. Cost, about $120; 3 hours credit. Dr. Anne Bourquin, College of Home Economics, Syracuse University, Syracuse 10, N. Y.

Institute of Community Leadership, New York State Citizens' Council at Cazenovia Junior College, Cazenovia, N. Y., June 25–28. Sharing good experience in local communities and developing the skills these jobs demand. Further information from New York State Citizens' Council, 613 East Genesee St., Syracuse 2, N. Y.

Survey Research Center, University of Michigan, summer institute in survey research techniques, June 23–July 18 and July 21–August 15. Designed to illustrate the theory and application of survey research to such fields as public health, human relations, psychology-sociology, among others. Further information from Survey Research Center University of Michigan, Ann Arbor.

Conference on Health Statistics, University of Michigan School of Public Health, Ann Arbor, June 16–20. To alert statisticians to the needs of administrators in program planning, execution and evaluation, and to extend the administrators' understanding of the application of statistical methods. For health directors, program directors, and public health statisticians. Enrollment $10; living accommodations available at Michigan Union. Apply H. E. Miller, Director, Continued Education, 109 So. Observatory St., Ann Arbor, Mich.

Workshop in Speech Correction, Marquette University, June 23–August 2. For the classroom teacher. Directed by Alfred J. Sokolnicki, supervisor of the University's speech clinic. Marquette University, Milwaukee 3, Wis.

Conference on Aging—University of Michigan, Institute for Human Adjustment, July 24–26. Cosponsored by the University's Schools of Public Health, Medicine, Architecture, Business Administration, and Social Work, the Michigan Medical Society, the Committee on Aging and Geriatrics of the Federal Security Agency, and the federal Housing and Home Finance Agency. Apply Wilma Donahue, Institute for Human Adjustment, 1510 Rackham Bldg., Ann Arbor, Mich.

Third Institute on Human Relations and Intergroup Understanding, The American University, June 16–July 3. Tuition $36. Residence hall facilities available. Further information from Charles K. Trueblood, Director, The American University, 1901 "F" Street, N.W., Washington, D. C.

Workshop on Community Resources for Older Adults, New York University Summer School at Chautauqua, N. Y., July 28–August 8. Tuition $60. Degree credit. Open to all interested in gerontology, whether degree candidates or not. Dormitory facilities available. Apply Registrar, Chautauqua Institution, Chautauqua, N. Y.

PERSONALS

LEO BERNSTEIN, M.D.,† previously county health officer for Hawaii, has been made

director of the Division of Hospitals and Medical Care of the Department of Health, Territory of Hawaii.

LILLIAN BISCHOFF, R.N.,† U. S. Public Health Service officer, and since 1948 associate director of public health nursing in the Georgia State Health Department, has joined the Point IV mission in New Delhi as chief nurse, the first nurse to be assigned to India under the program.

LAWRENCE D. BLITZER,† formerly laboratory technician, Prudential Insurance Company, Newark, N. J., has been promoted and transferred to the company's home office at Houston, Tex., as supervising medical technologist.

HERBERT M. BOSCH, M.P.H.,* professor of public health engineering, University of Minnesota, recently was appointed to the Minnesota State Board of Health by Governor C. Elmer Anderson to complete nearly 3 years of the unexpired term of FREDERIC H. BASS, resigned because of ill health.

CLIFFORD LEE BROWNELL,* chairman, Department of Health Education and Physical Education, Teachers College, Columbia University, was installed as president of the American Association for Health, Physical Education and Recreation, a department of the National Education Association, at the annual meeting in Los Angeles in April.

DOROTHY BUTZ, for more than 15 years district supervising nurse in the Geneva district, New York State Health Department, has retired from state service, to be succeeded by CLARA MARCIANO, formerly assistant district supervising nurse in the Rochester district.

MARION M. CAMPBELL, R.N.,† for the past 3 years territorial supervisor for New York State, Metropolitan Life Insurance Company, has been appointed consultant nurse in pediatrics, New York State Health Department.

M. G. CANDAU, M. D.,† has assumed the assistant directorship of the Pan American Sanitary Bureau, Regional Office of WHO, Washington, D. C., to which he was recently appointed, succeeding PAULO ANTUNES, M.D.,* now director of the School of Public Health, Sao Paulo, Brazil.

VIOLA E. CARDWELL, R.N., consultant in public health nursing, Association for the Aid of Crippled Children, and author of "The Cerebral Palsied Child and His Care in the Home," has been made director of publications and information of the Association.

VICTORIA M. CASS, M.D., M.P.H.,† former assistant director, Division of Hospitals, Massachusetts Department of Public Health, is now associate director, Peter Bent Brigham Hospital, Boston, Mass.

EARL C. CHAMBERLAYNE, D.V.M.,* former director of food control in the Manitoba Provincial Ministry of Health and Public Welfare, Winnepeg, has been appointed public health veterinarian, the Pan American Sanitary Bureau, Regional Office of WHO, assigned to the Bureau's Zone Office in Lima, Peru, as area supervisor in veterinary public health.

ARLO K. COX, M.D., former health officer of the Jackson-Washington Counties health unit in Florida, has been made health officer of Lee County, the newest full-time health department in the state.

SIR ALLEN DALEY,* recently retired medical officer of health of the London County Council, has joined the staff of the Baltimore City Health Department where for a period of 4 months he will serve as associate health officer on a half-time contract basis.

JOHN DEMENT, M.D.,* formerly assistant chief of the Division, has succeeded ELLIS D. SOX, M.D., as chief of the Division of Local Health Services, California State Department of Public Health.

JANE DONOVAN, chemist with the New Hampshire State Department of Health's Bureau of Food and Chemistry since 1945, has resigned to join the secretarial staff of Senator Styles Bridges of that state.

W. A. DORNEY, D.M.D., has been appointed senior clinician in the Bureau of Dental Health, West Virginia State Department of Health.

GILBERT H. DUNSTAN,* presently with the University of Alabama, has been appointed professor of sanitary engineering, State College of Washington, Pullman, beginning during the summer of 1952.

FREDERIC G. ELTON, now affiliated with the American Rehabilitation Committee, one of the founders of the work in New York City 30 years ago, was given a testimonial dinner in New York City on February 5. The dinner was attended by over 400 representatives of medicine, labor, rehabilitation, education, insurance and industry.

GLADYS A. EMERSON, Ph.D., head of the Department of Animal Nutrition at the Merck Institute for Therapeutic Research, Rahway, N. J., received the 1952 Francis P. Garvan Medal honoring American women in chemistry, at the 121st national meeting of the American Chemical Society in Milwaukee, Wis., in April.

LLOYD FLORIO, M.D., Dr.P.H.,* professor of preventive medicine, Colorado University School of Medicine, Denver, has been appointed manager of health and hospitals, Denver, succeeding JAMES DIXON, M.S.,* resigned to become commissioner of health of Philadelphia, Pa. Dr. Florio has indicated

that he will serve temporarily until a permanent appointee is secured.

JOHN T. GENTRY, M.D., M.P.H.,† is assistant to the chief of the Epidemiology Branch of the Communicable Disease Center, Public Health Service, Atlanta, Ga.

EUGENE A. GILLIS, M.D.,* chief of the Public Health Service's Division of Commissioned Officers, has been appointed chief of the Health Division of the Technical Coöperation Mission to Lebanon, where he is in charge of the health program of the TCA Mission working in coöperation with the Ministry of Health.

HARRY V. GILSON, associate commissioner of education, State of New York, has been named director of education, National Society for Crippled Children and Adults.

JAMES T. GOOGE, M.D.,* formerly senior surgeon in the Public Health Service regional office at San Francisco, Calif., is now with the Tennessee Valley Authority at Chattanooga.

SUE THOMPSON GOULD, M.D., M.S.P.H.,† former Columbia County (N.Y.) health officer, has become assistant medical director, Connecticut State Department of Public Welfare, Hartford.

WILTON L. HALVERSON, M.D.,* has been appointed by Governor Earl Warren to his third 4 year term as California State Director of Public Health. Dr. Halverson has recently returned from a 6 month leave of absence with the U. S. Public Health Service on a survey of the health programs of the Institute of Inter-American Affairs in Latin America.

FRED K. HOEHLER, director of the Department of Public Welfare and president, American Public Welfare Association, has been appointed to the national Commission on Financing of Hospital Care.

F. J. HOLTER, Ph.D.,† graduate advisor, School of Physical Education and Athletics, West Virginia University, has been appointed health education consultant to the West Virginia State Department of Public Health.

LILLIAN N. HOWELL, R.N.,† district supervising nurse in the Batavia district of the New York State Department of Health, has been appointed to the newly created position of consultant nurse in civil defense in the Department.

GERALD F. KEMPF, M.D.,† Indianapolis city health director since 1946, has been appointed superintendent of Indianapolis General Hospital to succeed CHARLES W. MYERS, M.D., resigned after serving 20 years. HENRY G. NESTER, M.D., former head of the Department of Physiology and Health, Butler University, has succeeded Dr. Kempf as health director of Indianapolis.

GEORGE A. KENNY,† health educator for the Framingham (Mass.) Heart Program since 1948, has been appointed head of a new bureau of health education in the Rhode Island Department of Health.

FRANCES KORD,† former health educator, Norfolk (Mass.) Health Association, has joined the staff of the Department of Public Health, Yale School of Medicine, assigned to a special research study of public health personnel needs and job analyses in this country.

JOAN KUHNEN, formerly coördinator, Lenox Hill Cerebral Palsy Center in New York City, has been named physical therapy consultant, National Society for Crippled Children and Adults, and assigned to the Society's New York office.

VIRGIL W. LANGWORTHY, formerly chief operator of the municipal water conditioning plant of Adrian, Mich., has been appointed research chemist, The Chlorine Institute, New York City, succeeding HARRY A. FABER,† resigned.

MARGARET LEA was recently appointed to the newly created post of assistant to the director of the Bureau of Tuberculosis, Baltimore City Health Department.

ARTHUR LENZ,† formerly senior statistician, New York City Department of Health, is now senior statistician, New York State Workmen's Compensation Board, New York City.

THOMAS F. MAHER, M.D., formerly with the Canadian Department of National Health and Welfare, has been appointed district health officer for the Berkshire District, Massachusetts Department of Public Health, on a temporary basis.

DONALD S. MARTIN, M.D.,* has resigned as dean of the University of Puerto Rico School of Medicine, San Juan, effective April 20. HAROLD W. BROWN, M.D., Dr.P.H.,* director of the School of Public Health, Columbia University, has been designated dean of the University of Puerto Rico School of Medicine to serve until a permanent dean is selected. Dr. Brown served previously as Columbia University's representative to the School of Tropical Medicine in Puerto Rico and was active in the early development of the new medical school. He will continue as director of the School of Public Health of Columbia University.

COL. MAX BOYD MCQUEEN, USAF (MC),* since 1947 district health officer, Idaho Department of Public Health, is now chief,

† Fellow.
* Member.

Preventable Diseases Branch of the Preventive Medicine Division, Office of the Air Force Surgeon General.

G. BURROUGHS MIDER, M.D., professor of cancer research and coördinator of cancer teaching in the School of Medicine and Dentistry, University of Rochester, New York, has been appointed scientific director, National Cancer Institute of the National Institutes of Health, where he will be responsible for intramural research.

LOREN D. MOORE, M.D.,* formerly first assistant to the commissioner, Massachusetts Department of Public Health, has recently been transferred from his work with the Department's Bureau of Administration to become the Department's representative at the Massachusetts Civil Defense Agency, Boston.

E. ELBRIDGE MORRILL, JR.,† formerly with the Arizona Division of Public Health, and instructor in sanitary engineering and preventive medicine, Randolph Field Air Force School of Aviation Medicine, has been appointed director of occupational health, Utah State Department of Health, succeeding POPE LAWRENCE, industrial hygiene engineer, who had been loaned to the Department by the Public Health Service.

E. K. MUSSON, M.D.,* former chief, Communicable Disease Section, Chicago Health Department, has been appointed deputy director, Wayne County Health Center, with headquarters in Eloise, Mich.

HOWARD A. ORVIS, M.D.,* has retired as health officer for the coöperative health department of Winnetka, Glencoe, Kenilworth, and Northfield, Ill., after 25 years of service. He has been succeeded by HERBERT S. MILLER, M.D.,* recently with the Missouri Department of Public Health and Welfare.

WILLIAM B. PAGE,† formerly assistant professor of civil engineering at Norwich University, Northfield, Vt., is now senior assistant sanitary engineer (R) in the Public Health Service, assigned to the Arctic Health Research Center, Anchorage, Alaska.

EDWARD W. PALMER, M.P.H.,† has recently been appointed health director of the Beverly, Mass., public schools.

JAMES E. PETERMAN, M.D., M.P.H.,† formerly senior assistant health officer, Baltimore County Health Department, Towson, Md., was recently appointed state district health officer for the newly established Metropolitan Health District, New Jersey State Department of Health, with headquarters in Newark.

MARY F. POLLARD,† until recently a member of the New Mexico Department of Public Health, is now consultant in community organization and health education for the National Society for Crippled Children and Adults.

ALTON S. POPE, M.D.,* director of the Division of Tuberculosis and Sanatoria since 1930 and since 1937 deputy commissioner of the Massachusetts Department of Public Health, on October 18, 1951, was honored at a dinner for his devotion and his contributions to the field of tuberculosis control.

LAURENCE K. RAINSFORD, M.D.,† has left his position as epidemiologist with the Division of Communicable Diseases, Massachusetts Department of Public Health, to accept a fellowship in New York's residency training program for public health physicians.

FREDA DIXON RESTENBERGER † has resigned as chief of the Division of Health Education, Pennsylvania Department of Health, to become executive director of the United Cerebral Palsy Association of Pennsylvania.

JANE JORDAN ROGERS, formerly membership promoter for the National Association of Manufacturers, has succeeded JOAN BOCHAT, public relations director, American Nurses' Association. The latter is on maternity leave.

ALFREDO SALAZAR, associate industrial hygienist, Bureau of Industrial Hygiene, West Virginia Department of Health, has resigned to become industrial hygienist at the Boston Navy Yard of the U. S. Navy.

CARL K. SCHMIDT, JR., former executive secretary of the Illinois Public Aid Commission, has been named assistant executive director of the National Society for Crippled Children and Adults, in charge of administration and organization.

J. A. SCOTT, O.B.E., M.D., M.R.C.P., D.P.H., has been appointed medical officer of health of the London County Council, The County Hall, London, S.E. 1, succeeding SIR ALLEN DALEY,* retired. Dr. Scott, who entered the Council's service in 1945, has been deputy medical officer of health since 1948. He visited the United States in 1949.

CHARLES SHEETZ,* since 1943 director of the Division of Sanitation, Topeka-Shawnee (Kans.) County Health Department, has resigned to enter private engineering work.

STANLEY SPRUNG has been appointed psychologist, Mental Health Clinic of the Kanawha-Charleston (W.Va.) Health Department, located in the clinic at Charleston Memorial Hospital.

MAURICE S. TARSHIS, Ph.D.,* has accepted a position as bacteriologist in charge, Tuberculosis Research Laboratory, Kennedy Veterans Hospital, Memphis, Tenn.

MEREDITH H. THOMPSON, Dr. Eng.,* has resigned as director of environmental hygiene in the Rensselaer County (N.Y.) Health Department to become chief of the Training

Section of the State Health Department's Bureau of Environmental Sanitation. He succeeds JOSEPH O'BRIEN,* training officer, loaned by the U. S. Public Health Service.

FREDERICK J. VINTINNER, M.D.,† assistant state health officer and director of the Bureau of Occupational Health, New Hampshire State Health Department, recently became director of the Industrial Health Section of a national health program in Peru established by the Institute of Inter-American Affairs.

MYRON E. WEGMAN, M.D.,* head of the Department of Pediatrics, Louisiana State University School of Medicine, New Orleans, has been appointed to the staff of the Pan American Sanitary Bureau, Regional Office of WHO, to take charge of the Bureau's newly created Division of Education, Training, and Technical Services. Dr. Wegman will take over the new position on June 1, at the end of the academic year.

WALTER J. WOLPERT, administrative assistant, Division of Local Health Services, Indiana State Board of Health, has been named educational and training officer of a 7 state region by the Federal Civil Defense Administration, with offices in Chicago.

WILLIAM W. WOOD,† former assistant executive secretary of the Massachusetts Heart Association, has been made assistant director of promotion, Save the Children Federation, with headquarters at 80 Eighth Avenue, New York, N. Y.

DEATHS

AGNES BREEN, R.N.,† for the past 16 years public health nurse with the Alaska Native Service, headquarters in Nulato, on February 6 (School Health Section).

SETH L. COX, M.D.,† retired, formerly executive secretary, Kansas Tuberculosis and Health Association, on February 26 (Unaffiliated).

MARION L. ENEVOLDSON,† of San Francisco, Calif., on October 9, 1951 (Epidemiology Section).

EDWARD F. FISHER, M.D.,† health officer, Dearborn (Mich.) Health Department (Health Officers Section).

IRA J. HAIN, M.D.,† health officer of Reading, Pa. (Health Officers Section).

WALTER E. HANDLEY, M.D.,† Commissioner of Health and Sanitation, City of Springfield, Ohio, on November 27, 1951 (Health Officers Section).

DELL R. HARPER, R.N.,† of Orangeburg, S. C., on June 30, 1950 (Public Health Nursing Section).

WILLIAM J. LENZ, M.D., Ph.D.,† research and consulting chemist, Lenz Labs., Louisville, Ky., on August 4, 1951 (Engineering Section).

OTTO LOHMAN, M.D.,† health officer, Manteno State Hospital, Chicago, Ill. (Health Officers Section).

GEORGE M. MACKENZIE, M.D.,† for 20 years (until 1947) director and physician-in-chief of the Mary Imogene Bassett Hospital, Cooperstown, N. Y., on March 25 (Medical Care Section).

IVA M. MILLER, M.D., M.P.H.,† private practice in Indianapolis, Ind., on December 5, 1951 (Industrial Hygiene Section).

ELLEN A. STONE, M.D.,* of Providence, R. I. (Maternal and Child Health Section).

NELLE SWARTZ, the first director of the Bureau of Women in Industry, New York State Department of Labor, and for many years until her retirement in 1950, a member of its Workmen's Compensation Board, in New York, on March 4.

ROBERT J. VANE,* since 1944 manager of occupational ratings in the Statistical Bureau of the Metropolitan Life Insurance Company, New York, N. Y., on March 11, at the age of 59 (Statistics Section).

ERNEST LINWOOD WALKER, M.D., retired University of California professor of tropical medicine, on January 19 at the age of 81.

CONFERENCES AND DATES

American Public Health Association. Headquarters, Public Auditorium, Cleveland, Ohio. Oct. 20–24.

Coming in May, June, July and August:

Air Pollution and Smoke Prevention Association of America. Hotel Statler, Cleveland, Ohio. June 9–12.

American Association of Medical Social Workers. Annual Business Meeting. Chicago, Ill. May 27.

American Diabetes Association. Annual Meeting. Chicago, Ill. June 7–8.

American Home Economics Association. Atlantic City, N. J. June 24–27.

American Library Association. Waldorf-Astoria Hotel, New York, N. Y. June 27–July 5.

American Medical Association. Annual Meeting. Chicago, Ill. June 9–13.

American National Red Cross. Annual Convention. Cleveland, Ohio. June 23–26.

American Nurses' Association. Biennial Nursing Convention. Atlantic City, N. J. June 16–20.

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* Member.
† Fellow.

American Pharmaceutical Association. Bellevue-Stratford Hotel, Philadelphia, Pa. Aug. 17–23.

American Physical Therapy Association. Bellevue-Stratford Hotel, Philadelphia, Pa. June 25–27.

American Psychiatric Association. Convention Hall, Atlantic City, N. J. May 12–16.

American Society of Medical Technologists. Portland, Ore. June 23–26.

American Veterinary Medical Association. Ambassador Hotel, Atlantic City, N. J. June 23–26.

American Water Works Association:
- Annual Conference. Kansas City, Mo. May 4–9.
- Canadian Section. Mount Royal Hotel, Montreal. May 26–28.
- Kansas Section. Town House, Kansas City, May 3; Salina, May 6.
- Missouri Section. Hotel President, Kansas City. May 6.
- Pennsylvania Section. Lawrence Hotel, Erie. June 18–20.

Canadian Public Health Association. Fort Garry Hotel, Winnepeg, Manitoba. June 16–19.

Colorado Public Health Association with Western Branch. Shirley-Savoy Hotel, Denver. June 5.

Georgia Public Health Association. Hotel Desoto, Savannah. May 5–7.

Governors' Conference. Shamrock Hotel, Houston, Tex. June 29–July 2.

International Union Against Tuberculosis and International Congress on Diseases of the Chest. Rio de Janeiro, Brazil. Aug. 24–30.

Kansas Public Health Association. Town House, Kansas City. May 5–7.

Massachusetts Public Health Association. University of Massachusetts Campus, Amherst. June 18–20.

Michigan Fifth Annual Conference on Aging. University of Michigan, Ann Arbor. June 24–26.

Michigan Public Health Association. Statler Hotel, Detroit. May 14–16.

Missouri Public Health Association. Colonial Hotel, Springfield. May 1–3.

National Conference of Social Work. Chicago, Ill. May 25–30.

National Congress of Parents and Teachers. Indianapolis, Ind. May 19–21.

National Council on Family Relations. New Brunswick, N. J. Aug. 31–Sept. 3.

National Education Association. Detroit, Mich. June 30–July 4.

National Hearing Week. American Hearing Society. May 4–10.

National League of Nursing Education. Atlantic City, N. J. June 16–20.

National Medical Association, Inc. Meharry University, Nashville, Tenn. Aug. 11–15

National Organization for Public Health Nursing. Biennial Nursing Convention. Atlantic City, N. J. June 14–20.

National Public Health Engineering Conference. University of Florida, Gainesville. May 20–21.

National Tuberculosis Association. Copley-Plaza Hotel, Boston, Mass. May 25–29.

New England Health Institute. University of Connecticut, Storrs. June 18–20.

New Mexico Public Health Association. Taos, N. M. May 25–29.

New York State Public Health Association. Lake Placid, N. Y. June 3–6.

Ohio Public Health Association. Deshler-Wallick Hotel, Columbus. May 26–28.

Planned Parenthood Federation of America. Hotel Roosevelt, New York, N. Y. May 2–4.

Purdue Industrial Waste Conference (Seventh). Purdue University, Lafayette, Ind. May 7–9.

United States Conference of Mayors. Waldorf-Astoria Hotel, New York, N. Y. May 15–17.

West Virginia Public Health Association. Daniel Boone Hotel, Charleston. May 8–10.

Western Branch, A.P.H.A., with Colorado Public Health Association. Shirley-Savoy Hotel, Denver, Colo. June 3–6.

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Bibliography of Public Health Motion Pictures and Film Strips. [April, 1950.] 4 pp. 15c.

Chemicals Introduced in the Production of Foods. [May Year Book 1950.] 8 pp. 15c.

How to Find What Health Education Materials You're Looking For. [August. 1944.] Revised 1948. 4 pp. 10c.

Improvement of Local Housing Regulation Under the Law. [Nov., 1942.] 16 pp. 25c.

Lemuel Shattuck—Still a Prophet. [February, 1949.] 27 pp. 25c.

The Local Health Department—Services and Responsibilities. An official statement of the American Public Health Association. [1950.] 8 pp. 10c.

Medical Care in a National Health Program. An Official Statement of the American Public Health Association Adopted October 4, 1944. [December, 1944.] 6 pp. 5c.

Microbiological Methods for Frozen Dessert Ingredients. [1948.] 28 pp. 40c each.

Opportunities of the Industrial Hygiene Section. C.-E. A. Winslow. [November, 1950.] 8 pp. Free.

Present Status of the Control of Air-borne Infections. [January, 1947.] Report of the Subcommittee for the Evaluation of Methods and Control of Air-Borne Infections. 10 pp. 25c.

Principles for Consideration in Judging the Probable Effectiveness of Federal Legislation Designed to Improve the Health of Children of School Age. [April, 1948.] 4 pp. 10c each.

Quality of Medical Care in a National Health Program. A Statement by the Subcommittee on Medical Care. Dean A. Clark, Chairman. [July, 1949.] 28 pp. 10c each, 100 copies $7.50

Recent Observations of the British National Health Service. [May, 1949.] 6 pp. 15c.

Recommended Practices for the Control of Poliomyelitis. [September, 1949.] 4 pp. 5c.

Sources of Supplementary Materials for Health Instruction. [November, 1949.] 12 pp. 25c.

Ventilation and Atmospheric Pollution. E. R. Hayhurst, Chairman. [July, 1943.] 7 pp. Uncovered 15c.

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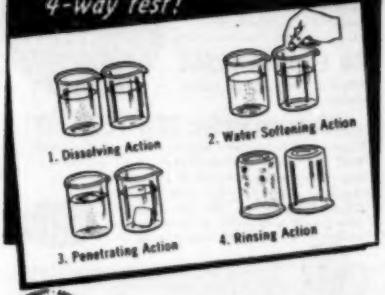

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1951—1952

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Preliminary	Meeting		New York, N. Y., April 18	1872
"	"		Long Branch, N. J., September 12	1872
1st	Annual	Meeting	Cincinnati, O., May 1–3	1873
2d	"	"	New York, N. Y., November 11–14	1873
3rd	"	"	Philadelphia, Pa.	1874
4th	"	"	Baltimore, Md.	1875
5th	"	"	Boston, Mass.	1876
6th	"	"	Chicago, Ill.	1877
7th	"	"	Richmond, Va.	1878
8th	"	"	Nashville, Tenn.	1879
9th	"	"	New Orleans, La.	1880
10th	"	"	Savannah, Ga.	1881
11th	"	"	Indianapolis, Ind.	1882
12th	"	"	Detroit, Mich.	1883
13th	"	"	St. Louis, Mo.	1884
14th	"	"	Washington, D. C.	1885
15th	"	"	Toronto, Ont.	1886
16th	"	"	Memphis, Tenn.	1887
17th	"	"	Milwaukee, Wis.	1888
18th	"	"	Brooklyn, N. Y.	1889
19th	"	"	Charleston, S. C.	1890
20th	"	"	Kansas City, Mo.	1891
21st	"	"	Mexico City, Mex.	1892
22d	"	"	Chicago, Ill.	1893
23d	"	"	Montreal, Que.	1894
24th	"	"	Denver, Colo.	1895
25th	"	"	Buffalo, N. Y.	1896
26th	"	"	Philadelphia, Pa.	1897
27th	"	"	Ottawa, Ont.	1898
28th	"	"	Minneapolis, Minn.	1899
29th	"	"	Indianapolis, Ind.	1900
30th	"	"	Buffalo, N. Y.	1901
31st	"	"	New Orleans, La.	1902
32d	"	"	Washington, D. C.	1903
33d	"	"	Havana, Cuba	1904
34th	"	"	Boston, Mass.	1905
35th	"	"	Mexico City, Mex.	1906
36th	"	"	Atlantic City, N. J.	1907
37th	"	"	Winnipeg, Man.	1908
38th	"	"	Richmond, Va.	1909
39th	"	"	Milwaukee, Wis.	1910
40th	"	"	Havana, Cuba	1911
41st	"	"	Washington, D. C.	1912
42d	"	"	Colorado Springs, Colo.	1913
43d	"	"	Jacksonville, Fla.	1914
44th	"	"	Rochester, N. Y.	1915
45th	"	"	Cincinnati, O.	1916
46th	"	"	Washington, D. C.	1917
47th	"	"	Chicago, Ill.	1918
48th	"	"	New Orleans, La.	1919
49th	"	"	San Francisco, Calif.	1920
50th	"	"	New York, N. Y.	1921
51st	"	"	Cleveland, O.	1922
52d	"	"	Boston, Mass.	1923
53d	"	"	Detroit, Mich.	1924
54th	"	"	St. Louis, Mo.	1925
55th	"	"	Buffalo, N. Y.	1926
56th	"	"	Cincinnati, O.	1927

ANNUAL MEETINGS (Cont.)

57th	"	"	Chicago, Ill.	1928
58th	"	"	Minneapolis, Minn.	1929
59th	"	"	Fort Worth, Tex.*	1930
60th	"	"	Montreal, Que.	1931
61st	"	"	Washington, D. C.	1932
62d	"	"	Indianapolis, Ind.	1933
63d	"	"	Pasadena, Calif.	1934
64th	"	"	Milwaukee, Wis.	1935
65th	"	"	New Orleans, La.†	1936
66th	"	"	New York, N. Y.	1937
67th	"	"	Kansas City, Mo.	1938
68th	"	"	Pittsburgh, Pa.	1939
69th	"	"	Detroit, Mich.	1940
70th	"	"	Atlantic City, N. J.	1941
71st	"	"	St. Louis, Mo.	1942
72d	"	"	(Wartime Conference) New York, N. Y.	1943
73d	"	"	(Wartime Conference) New York, N. Y.	1944
			No Meeting	1945
74th	"	"	Cleveland, O.	1946
75th	"	"	Atlantic City, N. J.	1947
76th	"	"	Boston, Mass.	1948
77th	"	"	New York, N. Y.	1949
78th	"	"	St. Louis, Mo.	1950
79th	"	"	San Francisco, Calif.	1951

* Post-Convention Meeting, Mexico City, Mex., 1930.
† Post-Convention Meeting, Havana, Cuba, 1936.

Publications of the A.P.H.A.

American Journal of Public Health and the Nation's Health. Single copies..... $1.00
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An Appraisal Method for Measuring the Quality of Housing: A Yardstick for Health Officers, Housing Officials and Planners:
Part I. Nature and Uses of the Method. 1945. 71 pp..... $1.00
Part II. Appraisal of Dwelling Conditions. Director's Manual; Field Procedures; Office Procedures (1946)..... $5.00
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Control of Communicable Diseases in Man. 7th ed., 1950. 159 pp..... .40
Diagnostic Procedures and Reagents. Technics for the Laboratory Diagnosis and Control of the Communicable Diseases. 3rd ed., 1950. 589 pp..... $6.00
Diagnostic Procedures for Virus and Rickettsial Diseases. 1948. 347 pp..... $4.00
Evaluation Schedule. For use in the study and appraisal of community health programs. 1947 .40
General Medical Care Programs in Local Health Departments. Milton Terris and Nathan Kramer. 1951. 129 pp..... .50
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Public Health—A Career with A Future. Revised edition 1949..... .15
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35 Year Index of the American Journal of Public Health. Years 1911 to 1945. 340 pp. Buckram Ed. $7.00. Paper Ed..... $3.75
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Scientific Exhibit Citations — San Francisco Annual Meeting

At the 79th Annual Meeting in San Francisco, 47 exhibitors participated in the Scientific Exhibit.

The Subcommittee on Evaluation, Andie Knutson, Ph.D., Chairman, continued a scoring project using objective criteria developed by the Committee. A summary of the detailed questionnaire and the points allowed each item follow:

1. Is it physically possible to read the exhibit from the point of observation?.. 10 points
2. Will all graphs, charts and diagrams be clearly understood by the intended audience? Has the use of statistical presentations been kept at a minimum?.. 10 points
3. Is the vocabulary and style of writing used such that the intended audience can comfortably follow and understand the exhibit? ..... 10 points
4. Does the exhibit sustain interest long enough to be read completely?.. 10 points
5. Does the exhibit impart the message that it is desired to impart? (This involved comparison with the statements of the objectives of each exhibit as given by the observers and the exhibitors.) ... 25 points

6a. Does the exhibit tie in with the interests of the visitor? ..... 10 points

6b. Does the exhibit offer the visitor a chance to participate in satisfying a personal purpose? ..... 15 points

7. Supplementary items (qualified attendant present, visual aids used, visitor-operated devices used and contributing to exhibit, literature supporting the exhibit objectives) ..... 10 points

The following exhibitors were announced as having earned the highest scores:

Canadian Department of National Health and Welfare
Children's Bureau, F.S.A.
Committee on Aging and Geriatrics, F.S.A.
Los Angeles City Health Department
Metropolitan Life Insurance Company
National Tuberculosis Association
New York State Department of Health
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American Public Health Association

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1951–1952

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These pages again bring to the readers the lists of Association officers and committee members. Once again they make a goodly company representing altogether more than 150 committees and other councils, a capable and loyal group of workers.

A certain proportion of the names of those formerly carried on such lists do not appear here. They have the Association's thanks for work well done in other years and for the fine spirit in which they have recognized the fact that, for the sake of the Association and its future effectiveness, leadership must be shared and leaders constantly developed through the assumption of responsibility. Our Association is stronger today because leaders periodically have stepped aside in order that others may step forward to acquire such knowledge as they themselves have gained.

Change in leadership is an accepted policy in the Association. Such a professional society is never strong if an informed few lead many uninformed though loyal followers. A strong association is composed of leaders many of whom could at any time take their turn and lead.

As we gratefully acknowledge the debt to those who have rendered their services as they carried their responsibilities of office, we turn with hope and expectation of other achievements to the men and women who are now to lead.

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Dean W. Roberts, M.D.
C. Rufus Rorem, Ph.D.
Raymond M. Walls, D.D.S.
E. Richard Weinerman, M.D.
Samuel Zibit

Statistics Section

W. Thurber Fales, Sc.D., *Co-Chairman*, Municipal Building, Baltimore, Md.
Isidore Altman
Selwyn D. Collins, Ph.D.
Neva R. Deardorff, Ph.D.
Matthew Taback
Louis Weiner

Committee on Membership and Directory

Clifford H. Greve, *Chairman*, U. S. Public Health Service, Washington, D. C.
Marjorie T. Bellows
Clara E. Councell, Ph.D.
Marguerite F. Hall, Ph.D.
Elliott H. Pennell
Samuel Shapiro

Committee on Occupational and Industrial Mortality Statistics

(Chairman to be appointed.)
Hugh P. Brinton, Ph.D.
W. Thurber Fales, Sc.D.
Lillian Guralnick
William M. Haenszel
Ruth R. Puffer, Dr.P.H.

Committee on Opportunities and Functions of Statisticians

Bernard G. Greenberg, Ph.D., *Chairman*, University of North Carolina School of Public Health, Chapel Hill, N. C.
Antonio Ciocco, D.Sc.
Ann Dillon
William M. Haenszel
Rachel M. Jenss, Sc.D.
Daniel D. Swinney
Howard West, Ph.D.

Committee on Sampling Techniques in Public Health Statistics

Theodore D. Woolsey, *Chairman*, U. S. Public Health Service, Washington, D. C.
William G. Cochran
Donald Mainland
Margaret P. Martin, Ph.D.
Felix E. Moore, Jr.

Committee on Training of Medical Health Statisticians

John W. Fertig, Ph.D., *Chairman*, 600 W. 168th St., New York, N. Y.
George F. Badger, M.D.
Carl E. Hopkins, Ph.D.
Margaret P. Merrell, Sc.D.
Ruth R. Puffer, Dr.P.H.
Margaret F. Shackelford
Jacob Yerushalmy, Ph.D.

Representatives of the American Public Health Association to Other Organizations and Committees for 1952

Adult Education Association Council of National Organizations

Ruth E. Grout, Ph.D.

Advisory Council on Medical Education

William P. Shepard, M.D.
Reginald M. Atwater, M.D., *Alternate*

American Association for the Advancement of Science
Reginald M. Atwater, M.D.
C.-E. A. Winslow, Dr.P.H.

American Camping Association
Health and Safety Committee
Francis B. Elder

American Documentation Institute (1950–1953)
Iwao M. Moriyama, Ph.D.

American National Red Cross
National Blood Program Advisory Committee
Vlado A. Getting, M.D.

American Society of Mechanical Engineers
Air Pollution Control Committee
Arthur C. Stern

American Society for Testing Materials
Committee on Industrial Water, D-19
F. Wellington Gilcreas
Paul W. Kabler, M.D.

Committee on Methods of Atmospheric Sampling and Analysis, D-22
(Representative to be appointed.)

Committee on Soap
Carl R. Fellers, Ph.D.

American Standards Association
Building Code Correlating Committee (1952–1953)
J. Lloyd Barron, C.E.

Letter Symbols and Abbreviations for Science and Engineering
Earle B. Phelps

Safety Code for Dry Cleaning Establishments
H. H. Schrenk, Ph.D.
H. G. Dyktor, *Alternate*

Sectional Committee on Allowable Concentrations of Toxic Dusts and Gases
Lewis J. Cralley, Ph.D.

Sectional Committee on Bedding and Upholstery—Subcommittee on Sterilization
F. J. Maier

Sectional Committee on Places of Outdoor Assembly
J. Lloyd Barron, C.E.

Sectional Committee on School Lighting
Leonard Greenburg, M.D.
Joel I. Connolly, *Alternate*

Sectional Committee on the Safety Code for Exhaust Systems, Z-9
Allen D. Brandt, Sc.D.

Sectional Committee on the Safety Code for Industrial Sanitation in Manufacturing Establishments
Leonard Greenburg, M.D.
Kenneth E. Markuson, M.D., *Alternate*

Sectional Committee on the Safety Code for the Industrial Use of X-Rays, Z-54
Merril Eisenbud

Sectional Committee on Safety in Electric and Gas Welding and Cutting Operations, Z-49
Allen D. Brandt, Sc.D.

Sectional Committee on Standards for Graphic Presentation, Y-15
Clarence J. Velz, C.E.

Ventilation Code
Earle B. Phelps

American Trudeau Society, National Tuberculosis Association, and the American Hospital Association (Joint with the A.P.H.A.)
Joseph G. Molner, M.D.

Baking Industry Sanitation Standards Committee
Abraham E. Abrahamson

Biological Stain Commission
Edmund K. Kline, Dr.P.H.

Children's Bureau
Committee on Maternal and Child Health and Crippled Children's Services
A. L. van Horn, M.D. (1952–1955)

Committee for the Improvement of Professional Preparation in Health Education, Physical Education and Recreation
Dorothy B. Nyswander, Ph.D.
Charles C. Wilson, M.D., *Alternate*

Council of National Organizations
Ruth E. Grout, Ph.D.

Council on Rheumatic Fever
David D. Rutstein, M.D.
George M. Wheatley, M.D.

Inter-Agency Committee for a Uniform Plumbing Code
A. F. Dappert
M. Warren Cowles

National Bureau of Standards—Standing Committee on Insect Wire Screening CS-138-49
Wesley E. Gilbertson

National Conference for Coöperation in Health Education
Charles C. Wilson, M.D.

National Health Council
Granville W. Larimore, M.D.
Ernest L. Stebbins, M.D.
Dorothy Wilson, Ed.D.

National Research Council
Advisory Panel to the Committee on Food Protection
William J. Darby, M.D.
Food and Nutrition Board
Norman Jolliffe, M.D.

National Security Council
Facilities Protection Board of the Interdepartmental Committee on Internal Security
Task Group on Water Supply
Edward S. Hopkins

National Technological Civil Protection Committee
Abel Wolman, Dr.Eng.
Arthur E. Gorman, *Alternate*

Selection Board for World Health Organization Fellowships
Leona Baumgartner, M.D. (1951–1953)

U. S. Department of Agriculture
Poultry Industry Advisory Committee
Earle G. Brown, M.D.
Ferdinand A. Korff
Subtask Group on Public Health Problems
Daniel Bergsma, M.D.
C. C. Potter

U. S. Department of Commerce
Standing Committee for Bituminous Coated Metal Septic Tanks—(Single Compartment, Residential) Commercial Standard 177–51
John E. Kiker, Jr.

U. S. Public Health Service
Committee of Consultants on Critical Materials Needs
William H. F. Warthen, M.D.

Water, Sewage, and Industrial Wastes Joint Committee on Critical Materials
B. A. Poole, C.E.
Abel Wolman, Dr.Eng.

Report of the Chairman of the Executive Board of the American Public Health Association to the Governing Council 1950-1951

THE American Public Health Association will soon be 80 years old. Those of us who have watched the growth and expansion of this professional society through its 79th year can have pride and satisfaction.

In our hands as Governing Council members there rests the responsibility for this oldest and largest association of public health workers. The decisions we reach affect not only the welfare of the A.P.H.A. with its almost 13,000 members, but to an increasing degree they will affect similar groups throughout the world, for what happens in the A.P.H.A. does set a pattern among the societies of public health workers elsewhere.

Looking forward to the 79th Annual Meeting to be held in San Francisco the week of October 29, it is desirable that the affairs of the Association should be reviewed so that members of the Council may contribute to the discussion with a background of full information. The purpose of this report is to acquaint the 117 members of the Governing Council with the highlights of the year's operation as it has been conducted by the Executive Board, by the Standing Committees, and by the other agencies of the A.P.H.A. within the policies determined by the Governing Council.

NEW AMENDMENTS IN OPERATION

First, briefly summarizing some of the events growing out of the last Annual Meeting held in St. Louis at the end of October, 1950, let me remind the Council that during this year there have come into operation for the first time new amendments to the Constitution and By-Laws which extend the voting privilege for Governing Council members to the entire membership of the Association. During August almost 13,000 ballots were distributed and it is already apparent as this report is written that the response from the members will result in the actual participation of about half of those eligible to vote in this ballot. As more of our members are involved in this process of selecting those who will fix policies for the Association, this change is to be welcomed. Thanks to the active coöperation of the Committee of Tellers, there is reason to believe that the burden of recording the thousands of ballots, each of them with more than 25 names, can be suitably overcome by means of mechanical tabulation. The Tellers will report at the first meeting of the Governing Council the results of this vote.

PUBLIC HEALTH IN THE DEFENSE PROGRAM

I reported to the Governing Council last year that a new Association Committee on Public Health in the Defense Program, under the chairmanship of Dr. Harry S. Mustard, had been set up by the Executive Board to study the manifold ways in which our resources and viewpoints can be used, having in mind the intricate relationships between military and civilian defense. The report

of this Association Committee has been reviewed and approved by the Executive Board and it has been published in the *American Journal of Public Health* (May, 1951).

ANNIVERSARIES

It is well for us to pause periodically to recognize significant anniversaries in the life of the Association. It is now 40 years since the Engineering Section was organized in 1911, and 30 years since the Maternal and Child Health Section was organized in 1921. It is noteworthy also among the Standing Committees that the Committee on Administrative Practice is completing 30 years and the Committee on Research and Standards 20 years of successful operation. One activity under the Committee on Research and Standards represented by the Subcommittee on the Hygiene of Housing is completing 15 years, during most of which time we have been able to sustain a staff of specially trained persons developing the reports and methods for which this committee is nationally and internationally recognized. Professor Winslow has added another signal service through this committee to the others he has rendered the Association. I am sure the Governing Council will feel as I do about the significance of this project as reflected in the following publications:

An Appraisal Method for Measuring the Quality of Housing—
- Part I. Nature and Uses of the Method.
- Part II. Appraisal of Dwelling Conditions: Survey Director's Manual; Field Procedures; Office Procedures.
- Part III. Appraisal of Neighborhood Environment.

Basic Principles of Healthful Housing (2nd ed.)

Standards for Healthful Housing—
- Part I. Planning the Neighborhood.
- Part II. Planning the Home for Occupancy.
- Part III. Construction and Equipment of the Home.

THE PROFESSIONAL EXAMINATION SERVICE

Previous reports to the Governing Council have stressed the growing importance of the Merit System Service which has provided professional examinations to official agencies and to universities for the selection and testing of public health personnel. As pointed out last year in this report, the budget for this service has now become the largest single project operated by the Association. Members of the Council will recognize this as a unique service through which public health has been able to apply the newer precision methods in examinations. It is gratifying that licensing boards are beginning to follow the lead of the universities and of the American Board of Preventive Medicine in using these proved methods in testing personnel.

During the year it seemed wise to the Executive Board to change the name of this service so that hereafter it will be called the Professional Examination Service of the American Public Health Association, reflecting the expansion of its field of interest from the narrower area of merit systems in our state and local government. This Professional Examination Service has now completed 10 years of operation since it was set up in response to requests from the federal agencies as they sought to implement the 1939 amendments to the Social Security Act.

FUTURE TRENDS AND POLICIES

The members of the Council as individuals will have received the communication from the Executive Board transmitting a first draft of a report from a special committee under the chairmanship of Dr. Lowell J. Reed. It was explained to the Governing Council a year ago that the Executive Board has been giving special consideration to a review of the structure, the operation and goals of the A.P.H.A. The Board has taken

counsel with skilled observers from several fields. Although the Executive Board is not prepared to bring to the Governing Council a definitive conclusion, the Board does wish to share with the members of the Council some of the thinking which has been carried on by this committee, believing that after full discussion we shall be ready to present a document upon which definitive decisions may be based. The interest of members of the Governing Council is earnestly solicited.

I shall not make this report an exhaustive systematic review of the year's activities, most of which are thoroughly reported in the *Year Book*, through the *American Journal of Public Health*, and in numerous special reports circulated to those with particular interests. Each of the Standing Committee chairmen will report to the Council in person. It is highly desirable, however, that the members of the Governing Council should be aware of some of the broad problems affecting the Association because of their bearing on decisions for the coming year and for the future.

LOCAL HEALTH UNITS FOR THE NATION

The Governing Council is familiar with the effort made by the Association during the last decade having as its goal the entire coverage of North America with adequate full-time health departments. The Association has continued to express its opinion that there should be national legislation to implement this goal. In accordance with repeated instructions from the Governing Council, the Executive Board has placed the Association squarely behind this legislation * and we have actively identified ourselves with the others who support these bills which are almost entirely nonpartisan. Although it is perfectly manifest that the defense program would be able to move forward much more rapidly and effectively if there were full-time coverage, especially in critical areas, nevertheless delay in the enactment of this legislation can be attributed to absorption in the details of a defense program which tends to emphasize guns and ammunition rather than protection of the human resources. We continue to hope for favorable action from the present Congress.

* Testimony presented on behalf of the A.P.H.A. is reprinted in the June, 1951, issue of the *Journal*, pp. 744–746.

THE MEMBERSHIP RECORD

Again the Governing Council will be gratified that the Association membership made progress during the year and on September 1, 1951, stood at 12,873. Members of the Council who are interested in the growth and make-up of the Association membership will wish to review the tables on pages 203 and 204 of the February, 1951, *American Journal of Public Health*.

It is possible again this year to speak with pride of the 313 Fellowship applications which will come before the Governing Council in San Francisco. This is by far the largest number of Fellowship applications ever to be considered in one year, comparing with an average of less than 250 in recent years and with but 43 in 1935. It would seem that the higher standards which have been posed during the last decade by the Governing Council for Fellowship recognition have resulted in making this grade much more sought after.

INTER-ASSOCIATION COMMITTEE ON HEALTH

Members of the Governing Council will recall that early in May, 1949, the Chairman of the A.P.H.A. Executive Board, after discussion with members of the Board, initiated conversations between several professional societies looking toward the creation of a planning group to represent the leading groups in the fields of medicine, public health, dentistry, hospitals, nursing, and public

welfare. Almost two years ago the formation of the Inter-Association Committee on Health was announced, representing six large national associations—the American Dental Association, the American Hospital Association, the American Medical Association, the American Nurses' Association, the American Public Health Association, and the American Public Welfare Association. This has served as a means for the exchange of information about the programs of the participating organizations. A series of statements has been released, each fully approved by all the six agencies in which are defined large areas of common agreement on certain subjects of mutual interest. Again I may say that in the opinion of the Executive Board this development has great potentialities for the future, representing as it does the first occasions when systematic meetings of all these groups have been held. The representatives from the Association during the current year have included William P. Shepard, M.D., President, Dean A. Clark, M.D., Chairman of the Subcommittee on Medical Care, and the Chairman of the Executive Board, with Leona Baumgartner, M.D., serving as alternate. Dr. Atwater, who attends in his capacity as one of the Executives, was chosen during the year as Secretary of the Inter-Association Committee on Health.

FINANCIAL STATUS

The current financial status of the Association indicates that for the first nine months of the current year both the estimates of expense and income have been kept approximately within the balanced budget of $481,775 adopted by the Executive Board. It is reasonable to expect, we think, that these estimates will stand until the Executive Board is able to review the experience of the later months, and in particular to know the results of this Annual Meeting which is a large and variable item in the budget and this year is operated with some uncertainty of income.

NOMINATING ROUTINE FOR OFFICERS

It will be recalled that the Governing Council in 1949 modified the routine of selecting a Nominating Committee for Officers and Executive Board Members to provide advance notice of the slate selected and to permit deliberate consideration for additional names when indicated. This committee of five consisting of the President and the Chairman of the Board, *ex officio*, and three members of the Council elected at the last meeting (Geoffrey Edsall, M.D., Alexander Langmuir, M.D., and Wilson T. Sowder, M.D.) have reported a nomination for each of the positions (President-Elect, three Vice-Presidents, Treasurer, and members of the Executive Board). Their report is being sent to members of the Governing Council well in advance of the meeting. Other nominations may be made as provided in the By-Laws by petition or they may be made from the floor at the first meeting of the Council on October 29, the voting to take place at the second meeting on October 31.

THE PUBLICATIONS RECORD

The world-wide distribution of the seventh edition of the A.P.H.A. report on *The Control of Communicable Diseases in Man* has been accelerated through the availability of a Spanish translation published with the coöperation of the Pan American Sanitary Bureau. A Portuguese translation has been completed and is expected to be published shortly. The report also is available in German. The Association is reprinting the report at the request of the Department of the Army, together with the Army's recommendations for treatment of each disease. It seems likely that these additions will prove exceptionally useful in dealing with these 80 diseases, many of which are

quite rare in the experience of the average North American public health worker. Although these Army recommendations as to treatment are in no sense official with the A.P.H.A., and are so indicated in the text, it is predicted that future editions of this invaluable report will be more useful if this information is included, involving as it does the discriminating use of newer drugs and antibiotics.

The Association is ready to publish shortly the 10th edition of the volume now called *Standard Methods for the Examination of Water and Sewage* as soon as the final manuscript has cleared the three sponsoring agencies. Progress has been made during the year in preparation of a forthcoming 10th edition of the companion volume *Standard Methods for the Examination of Dairy Products*.

The American Journal of Public Health will present three supplements during the year—the *Year Book* which was distributed with the May *Journal* to all subscribers, a special supplement on *Methods in Public Health Research* distributed with the August *Journal* through the coöperation of the U. S. Public Health Service, and the *Selected Papers from the Public Health, Nursing and Hospital Administration Programs of the International and Fourth American Congress on Obstetrics and Gynecology*, which will be published with the November *Journal* through the coöperation of the New York State Department of Health and the Children's Bureau.

The Committee on the Hygiene of Housing has completed a volume *Construction and Equipment of the Home* which is a companion volume to *Planning the Home for Occupancy* and *Planning the Neighborhood*, all distributed through the Public Administration Service, Chicago.

FUTURE MEETING PLACES

The Executive Board proposes to hold the 1952 Annual Meeting in Cleveland, Ohio, as forecast last year. This will be a mid-October meeting. I shall expect to bring to the Council plans for the 1953 and 1954 meetings after they have been further reviewed by the Executive Board at its forthcoming meeting.

A study of the geographic distribution of those who attend our annual meetings indicates that the great majority who come live within a circle represented by one night's train travel. Beyond this zone those who attend are mostly from the higher brackets of responsibility who find the meeting indispensable, however far away it may be located. We anticipate in San Francisco a meeting which should be well attended by those in the western portion of this continent, representing as it does the first time the Association has met on the West Coast since 1934 and the first time in San Francisco since 1921. We are encouraged by the indication of a very representative attendance from the members of the Governing Council who will be called upon in San Francisco as always to make important decisions.

A MEMBERSHIP DIRECTORY

A new and comprehensive *Membership Directory* will shortly be published cooperatively by the Association and the Health Publications Institute. The Executive Board believes that the preparation and publication of such a list on a periodic basis represents a fundamental service to the public health professions, to government agencies, and many others.

As has been pointed out to the Council, however, the magnitude of the problem is such that it is no longer possible to prepare and maintain such a directory as a casual and incidental task and to absorb the cost of preparation and printing in the routine budget of the Association. Such a venture can be financed only by the sale of the

Directory as is common in other professional societies.

PARTICIPATION IN WORLD HEALTH

The Program Committee is pleased to announce as a feature of the San Francisco session a very special occasion on international health. The program will be presented by Dr. Brock Chisholm, Director General of the World Health Organization, and his associates. At this time public announcement will be made of a Citizens Committee for WHO, an activity being developed by the National Health Council, which is providing the Secretariat and office space.

An unusual number of A.P.H.A. members and Fellows have been on health missions around the world, some of them as representatives of the Association, and reflecting the international character of our membership. The Executive Secretary has recently completed visits in Central and South America where he went at the invitation of the U. S. Department of State to consult on medical and public health affairs and on the organization of public health associations. He visited Mexico, Guatemala, Panama, Peru, Chile, Argentina, Uruguay, Brazil, and Venezuela. Dr. Winslow, the Editor of the *American Journal of Public Health*, spent three months in Geneva at the invitation of WHO. The A.P.H.A. was represented at the Annual Meeting of the Royal Sanitary Institute in Southport, England, during the past summer by Dr. Ruth Boynton. The Association was one of the endorsing organizations of the recent International Poliomyelitis Congress in Copenhagen and has been one of the sponsors of the Second International Gerontological Congress, meeting in St. Louis in September.

The organization of the agency provisionally called World Federation of Public Health and Preventive Medicine has now been completed. Dr. René Sand of Belgium is first President. The A.P.H.A. has not formally become a member of this group but is keeping informed of the developments through membership on the planning committee of the Executive Secretary.

OTHER JOINT ACTIVITIES

The Association took the initiative last April in an interagency meeting on the care of acute communicable diseases in general hospitals. Active participation by the American Medical Association, American Nurses' Association, American Hospital Association, and the American Academy of Pediatrics was gratifying. The meeting was underwritten by the National Foundation for Infantile Paralysis. The report with recommendations from the group has been prepared in the Association office and is now being circulated for comments preparatory to its presentation to each of the participating associations.

Late in 1950 a new Joint Committee on Critical Materials with Reference to Water, Sewage and Industrial Wastes was organized with the active participation of the A.P.H.A. Other agencies represented are the American Water Works Association, Federation of Sewage and Industrial Waste Association, Conference of State Sanitary Engineers, and the Water and Sewage Manufacturers Association.

The roster of sanitary and public health engineers prepared by the Association for the Scientific Man Power Series of the National Resources Security Board represents still another form of coöperation with other agencies. In the preparation of the roster, the American Society of Civil Engineers cooperated by giving the names and addresses of the members of its sanitary engineering division; the Surgeon General of the Army by providing the list of engineers in the Army's Sanitary Corps. Now that the list is complete and in use for its primary purpose, both the Office of Education and the Public

Health Service of the Federal Security Agency are making further analyses of the data. These analyses may prove to be significant for publication.

ACCREDITATION PROGRAM

The accreditation of schools of public health was undertaken by the Association some six years ago at the request of the Association of Schools of Public Health. It is now a continuing activity of the Association. Currently, 11 schools are accredited for the M.P.H. degree, six for master's degrees other than the M.P.H., with specialization in public health education, and nine for the Dr.P.H. degree.

During 1951 the Association expanded its accreditation activities but this time as one in a three-way complex of agencies. The problem of accreditation of field training facilities for public health became acute when the newly created American Board of Preventive Medicine and Public Health made a year's residency training a prerequisite for certification by the Board. It was agreed between the Council on Medical Education and Hospitals of the American Medical Association, the traditional agency for approving training facilities for the various medical specialists, and the Specialty Board that the American Public Health Association would make recommendations for approval of training programs based upon the evaluation through personal visits of a consultant and other means.

As consultant for this program, Dr. Haven Emerson visited 42 areas in 12 states and recommended 39 for approval. His recommendations were acted upon first by the Committee on Professional Education and then by the Executive Board and transmitted to the Specialty Board and the Council on Medical Education and Hospitals. The recommendations were endorsed at the Annual Meeting of the American Medical Association in June and are to be published as this report is written. The programs are accredited on a state rather than a local basis with the state health department accepting responsibility for developing and supervising the program. The coöperative arrangement appears to have worked well. The financial support of the W. K. Kellogg Foundation is appreciated.

A by-product of this accreditation program that might be expected is stimulation of more adequate community health services. Dr. Emerson reports a definite desire on the part of state health departments and local communities to have the prestige of an accredited program. It may well be that the desire to be among the elect in training public health physicians will serve as a new lever for prying loose sufficient funds to operate adequate health departments.

STATE AND LOCAL STUDIES

It is gratifying to report that the Pennsylvania Legislature has passed two acts; one, a permissive local health units act; another, providing a merit system in the state health department. I believe it is fair to say that the thorough-going study made of the department by our field service, under the guidance of the Committee on Administrative Practice, represented one of the chief threads in this new fabric of public health that has been woven for this Commonwealth.

A health survey of New York City is now being completed. It represents in effect a blueprint of a public health program for the city for the next quarter of a century. It is not a study of the health department alone, but part of an extensive study of the entire city government being made under the direction of Dr. Luther Gulick of the Institute of Public Administration at the request of the Mayor's Committee on Management Survey. Hence, alongside the program aspects of the health survey, management experts are analyzing administra-

tion. In evaluating the current program and drafting outlines for the future, Dr. Kandle, who is in charge for the Association, has called on the services of a variety of consultants. These have been drawn chiefly from the several schools of public health. Using the numerous skills of the varying professions in public health is a definite policy in our present survey practice.

A brief survey of the Virgin Islands health services was made at the request of the Governor and with the coöperation of the Children's Bureau.

COMMITTEE ON CHILD HEALTH

This committee's manual of recommended practices for child health conferences is now being completed. Among those who have been guiding this work are representatives of the American Academy of Pediatrics. The Academy will coöperate even more actively in the next project to be undertaken—the preparation of a manual of recommended practices in the care of handicapped children.

FINANCING THE ASSOCIATION

Those of us who have been privileged to sit on the Executive Board know from firsthand experience that the financing of the Association is somewhat unique among such organizations. In recent years the cost of operating the Association has approached $500,000, inclusive of the projects for which substantial grants have been received. Toward this total the dues received from members and Fellows represent about 20 per cent. The remainder has come from such earnings as the Association is able to make through advertising and the annual meeting and through the sale of publications, plus the very considerable grants received for special work as, for example, the sums paid by the states and universities for the use of professional examinations prepared by the A.P.H.A.

You will not be surprised to know that the A.P.H.A. budget has felt the effect of spiraling costs and inflation. The Governing Council will take it as a matter of pride that dynamic programs sponsored by more than a hundred committees of this professional society should demand expansion of services and increased budgets. This is a sign of healthy growth.

The members of the Council will wish to share information about the prospective balance between income and expense for the year ahead with members of the Executive Board who carry the basic fiscal responsibility. There are basic costs such as those for publishing the *Journal*, for rent of the modest office space occupied, for postage and travel which are inevitably rising through reasons well beyond the control of the American Public Health Association. There are perfectly legitimate demands from committees for facilities that will make possible the development of new publications and other services to professional workers. There are several well established activities of the A.P.H.A. program previously supported by specific grants which if they are to be continued must now be financed from basic Association income. There are demands for expansion in the *American Journal of Public Health* and for more extensive features of the annual meeting.

A resolution passed at the last meeting of the Governing Council in St. Louis directed the Executive Board to consider the wisdom of raising Association dues. I anticipate bringing to the Governing Council a formal recommendation from the Executive Board at its first meeting in San Francisco. In the meantime, however, the Council will wish to share the realistic fact that we shall have to choose between expanding income or else decreasing program. The latter alternative, of course, would be a very difficult one in the face of a thriving organization like the A.P.H.A.

The Executive Board is not unaware

of the fact that dues, if raised in 1952, may discourage to some extent the addition of new members who ought to share in the benefits of this society. They know that some persons will be inclined not to renew membership at a higher rate, so that at best in the first few months after such a change we can expect only a modest increase in actual income. I think, however, I speak for my associates on the Executive Board in saying that it is no longer a question of whether dues should be raised but only a question of when. The consideration and advice of the Governing Council are earnestly solicited in this regard.

THE LASKER AWARDS

For the sixth year the Association will be the channel for the Lasker Awards in public health. We extend appreciation to the Lasker Foundation for making this activity possible. These awards now occupy a significant place and have served to direct attention to achievements in medicine and public health. The recipients for 1951 point up the public health significance of efforts in cancer control, in the promotion of high grade health services, in epilepsy control, in practical epidemiology, in the rehabilitation of alcoholics, and in voluntary prepayment medical care. Together with the Sedgwick Medal they provide useful opportunities for recognizing outstanding achievements.

IN CONCLUSION

Once more it is my pleasure to congratulate all who have given service in this coöperative enterprise which is the American Public Health Association—the members of the Governing Council, of the Executive Board, the Officers of Sectional Committees, Standing Committees, and others who have helped in some capacity to make this 79th year important in the Association annals. The 13 Section Secretaries who have labored so effectively on our program are due for special appreciation.

Again we bring sincere thanks to those individuals and agencies who have provided funds for Association purposes without which a good proportion of our work could not have been done this year or any year. The list of Sustaining Members of the Association appears on page 7 and each month in the *Journal* and represents in the aggregate an item of our membership income which has helped beyond any other single category of the income to sustain the Association through lean years and to provide a backlog at all times, making possible many of the objective achievements of this professional society.

To our advertisers and to our commercial exhibitors, many of whom are long time and faithful friends, we express our appreciation for continued interest and support.

I specially wish to thank the Rockefeller Foundation, the National Foundation for Infantile Paralysis, the Milbank Memorial Fund, the W. K. Kellogg Foundation, the Albert and Mary Lasker Foundation, the New York Fund for Children, the New York Foundation, and the Association for the Aid of Crippled Children for contributions which have made possible the program of the Association and its service through innumerable channels to the public, together with other activities to which reference is elsewhere made.

One of the greatest pleasures of the Executive Board Chairmanship is the opportunity provided by this report to express appreciation to the Association staff on behalf of the Executive Board, the Governing Council, and our entire membership. One realizes after working with Dr. Atwater, Mrs. Walsh, Dr. Kandle, Mr. Elder, and their remarkable team that the smooth functioning of our Annual Meeting and all the other Association activities is not the result of

chance alone. The correlation between their efforts and the success of the Association is plus 1. Our gratitude and our indebtedness to them, however, cannot be expressed in statistical terms—unless we were to say it approaches infinity!

So, in brief summary, stands the 79th year of the American Public Health Association. To this record, of course, there should be added the issues of the *American Journal of Public Health*, the 1950–1951 *Year Book*, and other periodical publications of the Association. However, the most vital contributions to this society lie in an intangible realm where the growth of our leadership and prestige is to be found. Again, it is a good record to mark this year of the Association.

HUGH R. LEAVELL, M.D., *Chairman*

REPORTS OF COMMITTEES

The By-laws of the American Public Health Association provide that no standards shall be promulgated as the official and authorized judgment of the Association except with the approval of the Governing Council. Except where specifically noted to the contrary, the following reports are in the nature of progress reports from committees, most of which have had Section approval, but which have not been presented for Governing Council action, and therefore are not to be interpreted as standards approved by the American Public Health Association.

Administrative Practice*

THE Committee on Administrative Practice during its 31 years of activity has exercised a positive influence on the development of public health administration in the United States.

Its first 15 years were under the devoted and inspired leadership of C.-E. A. Winslow, Dr.P.H., and during this period such leaders as Charles V. Chapin, M.D., Haven Emerson, M.D., Allen W. Freeman, M.D., George T. Palmer, Dr. P.H., W. S. Rankin, M.D., Henry F. Vaughn, Dr.P.H., and W. F. Walker, Dr.P.H., were so successful that the foundations for the public health program in this country were solidly laid.

The questions raised by the studies of Dr. Chapin concerning the organization of municipal health departments resulted in the development of active interest on the part of the leaders of the American Public Health Association and the earliest funds for the work of the Committee were secured through the interest of Louis I. Dublin, Ph.D., of the Metropolitan Life Insurance Company, from that organization. Dr. Dublin was the first secretary of the Committee, and his services to the Association in this capacity over a period of 15 years were marked by important contributions to the program.

The major objectives of the Committee during these years continue today as an important segment of the work of the Committee. The present Subcommittee on State and Local Health Administration carries on the work considered so important by Dr. Winslow and his associates when the Committee on Administrative Practice was organized, and continues to be of prime importance because public health administration cannot remain static.

A major project of the Subcommittee has for some time been the development of a statement on "Elements of State Health Administration." The statement now in its seventh draft has had extensive consideration by Subcommittee members and is ready for submission to the Committee.

A by-product of this study has been the development of a separate statement entitled "Orientation of the State Health Department in the Structure of State Government."

THE EVALUATION PROJECT

Because of the shortage of funds, it has not been possible to promote participation in the Evaluation Project during the past two years. However, for the past year 64 schedules have been received in the Association office for grading and analyses. The States of Texas, Illinois, Michigan, Montana, North Carolina, Oklahoma, Tennessee, Virginia, West Virginia, and Wisconsin were represented. Mail consultation regarding the use and interpretation of the schedules was given on request to the officials of several states.

Field trials of experimental schedules on mental hygiene and sanitation continue. These, together with the short schedule on dental health, will be especially useful if there is opportunity to review the evaluation schedule.

In order properly to promote this important function of the Subcommittee on State and Local Health Administration, it will be necessary to secure funds from some source. The Association is attempting to do this.

* Report of the Chairman of the Committee to the Governing Council, October 29, 1951.

THE ENGINEERING SECTION PROJECT

The Study Committee on Sanitation is continuing its coöperation with the Engineering Field Associate of the American Public Health Association in charge of the Engineering Section Project, and the *Sanitation Evaluation Schedule* has been an important tool for research in this regard.

Many suggestions have been made regarding the *Sanitation Evaluation Schedule*, some indicating the difficulties and costliness in keeping appropriate records to supply the information called for, the need for more emphasis on accomplishment and less on effort, the need for simplification, for better definition of terms, for more emphasis on quality, and for more objective measures. On the positive side, the sections on school sanitation and on industrial sanitation are regarded as helpful in suggesting programs in these fields and the use of the *Schedule* gives an opportunity to study and review work in local sanitation programs on a uniform basis.

More than 2,000 schedules have been sent out. Schools of public health and other educational groups have made helpful suggestions and encouraging comments regarding the potential usefulness of this tool.

THE ROLE OF THE VETERINARIAN IN PUBLIC HEALTH

A statement on this subject is still in preparation and is undergoing extensive revision following a meeting of veterinarian members of the Study Committee at the annual meeting of the American Veterinary Medical Association.

FIELD STUDIES

The Field Director made two state studies of short duration. *Key to Public Health in Missouri* is the title of the report of a three weeks study in that state, and the Missouri State Health Council published a popular report based on the study entitled *A Citizen's Look* for general distribution. In Georgia a two weeks administrative study was made for the purpose of assisting the State Health Officer in his review of the administrative organization of that department.

At the request of the Governor and Insular Health Officer of the Virgin Islands, the Staff Director for the Subcommittee on Medical Care and the Feld Director made a two weeks study of the health program in the Islands.

An extensive New York City survey has been under way since April. This study, requested by the Mayor's Committee on Management Survey, will attempt to outline anticipated patterns of public health services for the next 25 years. Project Directors for this study include Ira V. Hiscock, Sc.D., Hugh R. Leavell, M.D., Abel Wolman, Dr.Eng., and Roscoe P. Kandle, M.D.

Charles B. Frasher, Field Consultant for the Association's Professional Examination Service, has been promoting principles of good health administration following the general policies as outlined by the Committee on Administrative Practice. He has given particular service in the States of Georgia and Vermont, and has participated as a consultant in the state studies reported.

LOCAL HEALTH UNITS

A number of new health departments have been created during the year. North Dakota, for example, has organized two new local health districts of four and two counties respectively. A third district of four or more counties is in the discussion stage. New York has added a county of 33,000, making the 14th upstate county to be organized on a county basis. In Illinois, three counties with a combined population of 64,000 are organizing a consolidated health department. In Iowa, the first full-time health officer has just been appointed for the City of Des Moines with a population of nearly 177,000.

On the basis of 1950 census figures, 72 per cent or nearly three-fourths of the population of continental United States live in areas that are organized to deliver at least the basic minimum local health services. Of the 1,226 health departments, 245, one-fifth of the total, are without health officers. Data are not presently available on the extent of shortage of other staff members, but from the evidence at hand it would appear to be serious. While 44 per cent of the health departments served fewer than 40,000 persons, it is interesting to note that they were more than two-thirds of those with health officer vacancies. It is reasonable to conclude that one of the factors affecting the filling of health officer positions is the size of the population served and thus to some degree the extent of challenge the job presents to the prospective administrator. In this connection, an editorial in the *American Journal of Public Health* (41, 8:1001–1002 (Aug.), 1951) suggests that the public health profession might well accept 100,000 population as the minimum which can justify and support an adequate community health department.

A movement that is gaining ground because of the shortage of medical personnel is the use of a nonmedical administrator either as the administrative officer of the department in the absence of a health officer, or as an assistant to the medical administrator. Several states are experimenting with the use of nonmedical administrators. Kentucky, currently with health officer vacancies in 32 of its 72 health departments, has lay administrators in 13 of the departments without health officers. Reportedly, these administrators are appointed with the understanding that they are temporary and will be replaced as medical personnel becomes available. Information is not available indicating that these employees are being considered or trained for some permanent function in the community health organization. North Dakota, on the other hand, which is also using this technique, is preparing the lay administrator for a permanent function in the health setup even with a medical health officer. Two states have a long tradition of nonmedical health officers—Massachusetts and New Jersey. With a scattering of nonmedical administrators in other states, more than 100 of the current 1,226 jurisdictions are being served by nonmedical administrators.

The National Advisory Committee on Local Health Units has now been in existence nearly four years. During that time it has sponsored regional conferences in various parts of the country which involved a total of 25 states. In a number of these states many of the later developments came out of the inspiration of these conferences—notably the Iowa, Kansas, and Oklahoma state health councils. In the latter two states, state conferences modeled on the regional were developed by citizens. The latest regional conference, in January, 1951, called at the instance of the New Jersey Governor's Committee, was a powerful force in building up sentiment in support of that state's proposed union health bill; it helped also in Pennsylvania's campaign and provided valuable ammunition for the campaign to give adequate recognition to the need for adequate health services in a civil defense program everywhere.

The National Advisory Committee has supported the Federal Local Health Units legislation. Its chairman, Dr. Rademaker, appeared before the House Committee in support of the bill, and Dr. Emerson testified at both Senate and House hearings.

EVALUATION OF ADMINISTRATIVE PRACTICES

Goiter Control

Over 53,000 school children from

kindergarten through high school in four Michigan counties were examined in the recent survey by the Michigan Goiter Committee. The Study Committee on Endemic Goiter is coöperating in this project. A preliminary report shows that only 1.4 per cent of the children were found with enlargement of the thyroid gland, a decided contrast with the studies in the same counties 27 years ago when 47 per cent were found to have simple goiter. Of the 787 children showing evidence of thyroid enlargement in the recent study all but 34 stated that they used iodized salt.

The Study Committee is analyzing the results of the thyroid survey as well as the reports on the amount of iodized salt sold in each of the four counties.

Michigan and Minnesota are planning to present an Iodized Salt Bill to their legislatures this fall. This is an important move and if successful will go far to encourage federal legislation on this subject.

Tuberculosis Control Procedures

During the year, a statement on BCG Vaccination prepared by the Study Committee on Tuberculosis Control Procedures was mailed to members of the Committee on Administrative Practice for comment and criticism. A revised statement on this subject is now ready for Committee approval.*

A special study committee has been appointed to give consideration to administrative practices in supervision of tuberculosis patients and their contacts and to prepare a manual for use of workers in this field. The Committee reports definite progress in this subject.

MEDICAL CARE

Within recent years the joint activities of the Subcommittee on Medical Care with representatives of other professional associations resulted in the development of such significant documents as "Planning for the Chronically Ill," (*A.J.P.H.* 37, 10:1256 (Oct.), 1947), subsequently adopted officially by this Association, the American Hospital Association, the American Medical Association, and the American Public Welfare Association; and the statement on "Coördination of Hospitals and Health Departments" (*A.J.P.H.* 38, 5: 700 (May), 1948), similarly adopted by this Association and the American Hospital Association. Further documentation of the latter statement was provided at the 1950 Annual Meeting at a session on "Joint Housing of Hospitals, Health Departments and Laboratories" at which a report by the Subcommittee's staff was presented on the coördinated activities of health departments and hospitals that are jointly housed. Subsequently published in the *Journal* (41, 3:319 (Mar.), 1951), this report also appeared in condensed form in *Hospitals*, official publication of the American Hospital Association.

More recently there has been issued a preliminary draft of a statement on "Tax-supported General Medical Care for the Needy" prepared by the Subcommittee and the Committee on Medical Care of the American Public Welfare Association. This statement is designed to foster the development of coöperative relationships between public health and welfare departments and to set forth general principles applicable in the administration of medical care for the needy.

Particularly timely in this connection are two recent publications by the Subcommittee—one, an annotated bibliography on *Medical Care for the Needy* which has been widely distributed to health and welfare officials; the other, a staff report on *General Medical Care Programs in Local Health Departments* which documents the experiences of health departments in this field.

* This statement was approved and appears on page 72 of this *Year Book*.

In another joint enterprise the Subcommittee is participating with the Council on Medical Care Teaching of the Conference of Professors of Preventive Medicine in the development of a text on "Readings in Medical Care." It is believed that this text will serve as an invaluable source of references for teaching purposes in schools of medicine, public health, social work, dentistry, nursing, and others.

The Subcommittee has completed a preliminary statement on what are considered to be important principles in the development of effective federal-state-local relationships in the administration of medical care programs.

With the assistance of the many useful comments and suggestions that were submitted on the publication of the initial draft statement on the quality of medical care, the Subcommittee is currently revising this document.

The Committee regrets the resignation of Milton Terris, M.D., as Staff Director of the Subcommittee on Medical Care. Dr. Terris has accepted an appointment as Associate Dean in charge of Postgraduate Education at the University of Buffalo School of Medicine. He will continue to serve as secretary of the Medical Care Section.

PUBLIC HEALTH NURSING*

In March, 1951, the special study begun in 1950 culminated in the report *Study of Combination Services in Public Health Nursing*. This report will be considered for endorsement by the C.A.P. during this week. The study describes characteristics of five combination services,† their history of development, differences in organization, financial arrangements, administration, personnel policies, and management of personnel. Part III presents some general principles agreed upon by the Subcommittee on Public Health Nursing and based upon the findings of field work for the development and administration of combination agencies.

The Subcommittee has continued to give consideration to the desirable placement of the nursing unit in the local or state health department. It has drawn up and submitted a statement on public health nursing for inclusion in the statement on "Elements of State Health Administration" which is now being prepared by the C.A.P.

In coöperation with staff members of the Metropolitan Life Insurance Company, the Subcommittee has made a special study of the effect of the termination of the Metropolitan's nursing contracts. The report of this study was published in May.

As far as possible the nursing committee has engaged in national and local activities in connection with the chronically ill and the aging. Representatives attended the National Conference on Chronic Disease in Chicago in March, 1951. In coöperation with the Commission on Chronic Illness, a questionnaire on care given chronically ill persons by public health nursing organizations was developed, tested for usability with seven agencies, and then sent out by the Commission in June, 1951, to approximately 800 public health nursing services. A letter from the National Organization for Public Health Nursing accompanied the questionnaire. Results will be tabulated by the Commission.

Publications growing out of the various activities of the Subcommittee on Public Health Nursing were as follows:

Rusby, Dorothy. *A Study of Combination Services in Public Health Nursing*. A project of the Committee on Nursing Administration

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* The Subcommittee on Public Health Nursing of the C.A.P. is identical with the Committee on Nursing Administration of the N.O.P.H.N.

† A combination service has been defined by the N.O.P.H.N. as a service that is jointly administered by both governmental and voluntary agencies; financed by tax funds, earnings and contributions; and in which all field service offered by the participating agencies is rendered by a single staff of public health nurses.

of the National Organization for Public Health Nursing. New York: N.O.P.H.N., 1950. Price, $1.25.

Klem, Margaret C. Amendments to the Social Security Act of Special Importance to Nurses. *Pub. Health Nursing* (Apr.), 1951. Reprinted. Price, 25¢.

Kidneigh, John C. The Philosophy of Administrative Process and the Role of the Consultant. *Pub. Health Nursing* (Sept.), 1951.

The Effect of the Termination of Metropolitan Nursing Contracts—by a special N.O.P.H.N. Committee. *Pub. Health Nursing* (May), 1951. Price, 25¢.

ACCIDENT PREVENTION

A special program on home accident prevention will be held Wednesday evening, October 31. This is the third successive year in which a program of this type has been sponsored by the Subcommittee on Accident Prevention. The theme this year is "Technical Approaches to the Home Accident Problem" which will include the formal presentation and discussion of Epidemiological and Clinical Techniques, Mortality Analysis as a Direction Finder, and Rallying Public Support for a Home Accident Prevention Program.

During the year the Subcommittee has collected information on activities in home accident prevention being carried out by state and local health departments. To date, reports have been received from 17 state health departments, 44 districts, and 94 city and county departments.

The Subcommittee is also attempting to determine the degree of emphasis placed upon home accident prevention teaching in graduate schools of nursing, medical schools, and schools of public health. Responses to questionnaires and to queries by members of the Subcommittee indicate a paucity of emphasis on this subject. However, many of the schools have requested assistance from the Subcommittee in correcting this deficiency. A study group has been appointed to prepare a guide for graduate schools of nursing regarding home accident prevention teaching. Upon completion of this task, the Subcommittee will consider the preparation of guides for the other schools.

POSITION OF PUBLIC HEALTH IN THE FEDERAL GOVERNMENT

At the request of the Executive Board a Study Committee on the Place of Public Health in the Federal Government has been appointed. A statement prepared by this Study Committee will have consideration at the meeting of the Committee on Administrative Practice this evening.

It has been an honor to serve the Association as chairman of this committee for the past 8 years, and I greatly appreciate the opportunity of working with approximately 200 members of the Association who comprise the membership of the various subcommittees.

The leadership of the chairmen of the subcommittees has been an inspiration to me during this period of stress brought about by the terrible costs of war, a troubled peace, and a divided world. At this time, public health administrators must face the challenge of service under conditions which are far from ideal, and which require the careful planning and leadership of the officers and the committees of the Association.

I wish to express my sincere appreciation to Dr. Reginald Atwater for his leadership and guidance and his associates, particularly Dr. Roscoe Kandle and Edith Boyd, who have given their time and energies far above the call of duty to the work of the Committee on Administrative Practice.

WILTON L. HALVERSON, M.D.,
Director, State Department of Public Health, San Francisco, Calif., *Chairman*

Eligibility*

As of October 1, 1951, the membership of the Association totaled 13,044, an increment of about 600 during the previous 12 months. Of this number, some 19 per cent (2,407) are Fellows; about 4 per cent are Life Members. During the year preceding September 1, your Committee on Eligibility approved by mail 1,381 applications for membership. Since the current meeting began, the Committee members have assembled twice to consider for Fellowship the 313 applicants whose names were published in the September issue of the *American Journal of Public Health*. Of this number, 24 were not approved by the Section Councils, the Executive Board (voting on applications for Unaffiliated Fellowship), and the Committee on Eligibility. The Committee on Eligibility recommends unanimously to the Governing Council that the remaining 289 applicants, the names of whom have been placed before you, be elected to Fellowship in this Association.

Ten applications for Life Membership have been received from Fellows of the Association. It is recommended that their names—which appear at the end of the list of Fellowship applicants—be added to the roster of Life Members of the American Public Health Association.

The system—initiated last year—of considering at its first meeting Fellowship applications graded by members of Section Councils was followed by the Committee in 1951. These applications, with Eligibility Committee comments, were returned for final Section Council action before the recommendations of the Committee to the Governing Council were formulated. This procedure continues to give both the Section Councils and the Committee better opportunity for uniform and adequate appraisal of applications. It permits the expeditious screening of candidates about whom there is no question of qualification and a concentration of time and effort on controversial names.

The Committee considered the applications for Affiliated Society status received from the New York State Public Health Association and from the North Carolina Public Health Association. It finds that these groups meet the requirements of the American Public Health Association for affiliation, but in view of the pending studies on this subject by the Reference Committee on Affiliated Societies and Branches under the Chairmanship of Dr. Myron Wegman, and by the Committee on Trends and Policies under the Chairmanship of Dr. Lowell J. Reed, we raise the question with the Governing Council as to whether the election of additional affiliated societies is advisable during this interval.

Consideration was also given to the formulation of a policy regarding the affiliation of public health organizations in other countries with the American Public Health Association. It was the consensus of the Committee, again in view of the pending reports on this subject by the committees mentioned, that formal action at this time would be inappropriate. It does suggest, however, that no geographic or political boundaries should be considered with respect to the activities or influence of the American Public Health Association in foreign lands, and that stimulating the development of public health organizations abroad and coöperating with these

* Report of the Chairman of the Committee to the Governing Council October 31, 1951.

organizations are eminently proper functions of the Association.

In view of the foregoing, it was deemed appropriate to depart from the traditional custom of restricting the election of Honorary Fellows to two or three individuals. Accordingly, the following list of seven persons, whose distinguished service in public health in their respective nations is well known, is submitted herewith, together with the recommendation that these individuals be elected Honorary Fellows of the American Public Health Association:

Paulo Cesar de Azevedo Antunes, M.D., Dr.P.H., Director-Elect, Faculty of Public Health, University of Sao Paulo, Sao Paulo, Brazil

Sir Allen Daley, M.D., Chief Medical Officer, London County Council, London, England

Arnoldo Gabaldon, M.D., Sc.D., Chief, Division of Malariology, Ministry of Health and Social Assistance, Maracay, Aragua, Venezuela

J. A. Höjer, M.D., Chief Medical Officer, National Department of Health, Stockholm, Sweden

Col. M. N. Jafar, M.D., Director-General of Health Services, Karachi, Pakistan

C. K. Lakshmanan, M.D., Head, All-India Institute of Hygiene, Calcutta, India

J. Parisot, M.D., Professor of Hygiene, Faculty of Medicine, University of Nancy, Nancy, France

JUSTIN M. ANDREWS, Sc.D.
Communicable Disease Center
U. S. Public Health Service
Atlanta, Ga., *Chairman*

Professional Education*

LAST year a very detailed report on all phases of the work of the Committee on Professional Education was submitted to the Governing Council. This year, the chairman of the Committee wishes to give an account of the year's activities and then would like to discuss some recent developments with which the Committee should concern itself and the manner in which new activities might be initiated to take account of the changing scene.

New members appointed to the Committee this year were Dean W. Roberts, M.D., Deputy Director of the Maryland State Department of Health, and Franklin H. Top, M.D., Professor of Epidemiology in the School of Public Health, University of Minnesota, replacing Gaylord W. Anderson, M.D., and W. W. Bauer, M.D., whose terms had expired. Roy J. Morton, M.S. (Engr.), and Edmund K. Kline, Dr.P.H., were reappointed for 3 year terms.

ACCREDITATION OF FIELD TRAINING AREAS

A major activity of the Committee during this year was the project on Accreditation of Field Training Areas. Attention was given first to training areas for public health physicians because the American Board of Preventive Medicine and Public Health specifies a year's residency training as a prerequisite for membership on the Board. The project has the financial support of the W. K. Kellogg Foundation and the consultant service of Dr. Haven Emerson. On the strength of Dr. Emerson's report of April 30, 1951, the Executive Board upon recommendation of the Committee endorsed the approval of field training programs submitted by 12 states—California, Delaware, Florida, Illinois, Maryland, Massachusetts, Michigan, Minnesota, New York, North Carolina, Virginia, and Washington, utilizing facilities in 39 specified local areas in these states. The report was passed on to the American Board of Preventive Medicine and Public Health and the Council on Medical Education and Hospitals of the American Medical Association. The recommendations were accepted in full and the list of approved residencies in the 12 states was published in the September 29, 1951, issue of the *Journal of the American Medical Association.*

An interesting side light of this program is its inspiring effect on both state and local health departments to meet the qualifications and enjoy the prestige of an accredited training program.

Next steps in the Accreditation of Field Training Areas will include the development of systematized programs, which will involve consultant service to presently accredited areas and, in all probability, the consideration of new applications. In addition, it is anticipated that the accreditation process will be applied for other specialty groups in public health, such as health educators.

ACCREDITATION OF SCHOOLS OF PUBLIC HEALTH

The accreditation of institutions in the United States and Canada offering graduate degrees in public health preceded the Accreditation of Field Training Areas by some years. Based on a summary by Professor Winslow, consultant for this project, the Committee recom-

* Report of the Chairman of the Committee to the Governing Council, October 29, 1951.

mended to the Executive Board for accreditation again this year 11 schools for the degree of Master of Public Health (Diploma in Public Health in Canada), 9 schools for the Doctor of Public Health, and 6 schools for the Master's Degree in Public Health Education other than the M.P.H. Accreditation was granted by the Executive Board on June 2.

ANNUAL REPORT ON DEGREES AND CERTIFICATES

The annual report on Public Health Degrees and Certificates Granted in the United States and Canada was published in the February (1951) issue of the *American Journal of Public Health*. Only the summary tables were published, but detailed tabulations in mimeographed form are available from the Association office. Student enrollments in both graduate public health courses and public health engineering courses showed an increase. The largest percentage increase occurred among veterinarians and sanitarians, both groups more than doubling in number. Physician enrollments remained essentially unchanged. This group was still the largest among public health graduate students, representing somewhat over one-fourth of the total.

In an editorial in the May, 1951, *Journal* Dr. Winslow discussed the question of the growing multiplicity of degrees in the public health field. He noted that the number of schools giving the M.P.H. and Dr.P.H. degrees has increased since the analysis of degrees and certificates was started in 1933, and that the total list of degrees offered now includes no less than 16 titles other than M.P.H. and Dr.P.H. In the public health engineering field, the degrees reported by the various schools are so varied that the degree material is now tabulated merely in the form of master's and doctor's degrees.

Professor Winslow feels that it is highly undesirable to continue special professional degrees, such as those in tropical medicine or industrial hygiene and health education, and expresses his hope that the eruption of "overspecialized" new degrees will in time subside.

RECOMMENDED EDUCATIONAL QUALIFICATIONS

Two new reports on Recommended Educational Qualifications were published in proposed form in the *American Journal of Public Health* early this year. One relates to Public Health Veterinarians and the other to Administrative Personnel (Non-medical) in Public Health Agencies. These reports will come before the Governing Council for approval on Wednesday, October 31. Two revised reports—one on Educational Qualifications of Public Health Dentists, the other for School Physicians —will shortly be published in proposed form for comment and criticism. At the present time there are in use 17 reports on Educational Qualifications. Requests for copies are being received from all parts of the world. Indeed, one report — Educational Qualifications of Community Health Educators—has been translated into French by the World Health Organization.

APPRENTICESHIPS IN HEALTH EDUCATION

A Conference Committee on Apprenticeships in Health Education has been organized under the Subcommittee on Educational Qualifications of Community Health Educators. Under the chairmanship of Mayhew Derryberry, Ph.D., this committee, which includes representation of the Society of Public Health Educators and the professors of health education in schools of public health, is giving first attention to existing facilities and to assessing the need for the establishment of additional traineeships. The Conference Committee plans to follow this survey with recommenda-

tions for the content and conduct of traineeships in health education. Since traineeships are one important method of attracting, selecting, and indoctrinating new personnel of high caliber into public health, the work done by the Conference Committee on Apprenticeships in Health Education is of importance to the entire field of public health.

SALARY STUDIES

The U. S. Public Health Service released the report of the fourth annual study of salaries in state health departments last fall. A fifth study, based on salaries as of August 1, 1951, will be ready for distribution in December. The five state salary studies published between 1947 and 1951, as well as three annual studies of salaries in local health departments, were cosponsored by the Association of State and Territorial Health Officers and the Subcommittee on Salary Study of this committee.

Some objective principles for the drafting of salary recommendations for various professional groups are being worked on by the Subcommittee on Salary Study. They take into account efficiency and length of service in addition to education, training, and experience.

PROFESSIONAL EXAMINATION SERVICE (FORMERLY THE MERIT SYSTEM SERVICE)

This important project is now ten years old and it seems well to review its history in this report. On June 18, 1941, the American Public Health Association received the first funds to be used for the financing of a new project which it had consented to sponsor. This project, urged upon the Association by representatives of the Public Health Service and the Children's Bureau, had as its purpose the development of written tests to be used by state merit system agencies in selecting professional public health personnel. It was called the Merit System Unit. On June 18, 1951, test question No. 43,773 was entered on the records; 35 copies of a test for School Nurse were sent to New Jersey—the 1,726th order to be filled; approximately half a million dollars had been spent on the program; 3,000 public health workers all over the country had assisted in the writing or review of questions; tests were available in over 20 public health specialties; and the staff, including 20 consultants in public health, numbered 44 people.

The ten years of growth had proceeded in more than one dimension. Not only had the original purpose of the program been met, but many originally unanticipated uses of the large resources of testing material had developed. Tests were being used by schools of public health and public health nursing, by the American Board of Preventive Medicine and Public Health, by the Division of Commissioned Officers of the Public Health Service, by several state licensing and certification boards. In recognition of this increased diversification of the program, the Executive Board of the Association on June 20, 1951, authorized the Unit (since 1948 called the Merit System Service) to change its name to the Professional Examination Service. This change of name became effective on October 1, 1951.

A backward glance from the milestone of this tenth anniversary picks out from the scene several noteworthy prominences. In 1943 Dr. Lillian D. Long, a doctor of philosophy with training and experience in psychometrics, joined the staff and later became director of the Service. The year 1946 is marked by the establishment of a field consultation service financed by a grant from the National Foundation for Infantile Paralysis, Inc. Mr. Charles B. Frasher was appointed field consultant. In the five succeeding years he has traveled thousands of miles in visits to every state of the Union to secure an understanding by

health departments and merit systems of the importance of good testing methods in effective personnel practices.

In 1947, the Division of Commissioned Officers of the Public Health Service requested the Professional Examination Service to coöperate with it in its selection program. Since that time, 139 tests have been prepared and administered to over 2,000 applicants for commissions in dentistry, medicine, nursing, sanitary engineering, health education, nutrition, and psychology.

In 1948, perhaps the most significant development took place. Until that time the Professional Examination Service had been supported, almost in entirety, by funds from the Children's Bureau, the Public Health Service, and the National Foundation for Infantile Paralysis. Wisdom dictated the desirability of establishing the project on a self-supporting basis. To this end, it was proposed that the states pay an annual fee which would entitle them to unlimited use of all available examinations during the contract year. So successful has this plan been that, as of this writing, 30 states, 1 territory, and 8 cities, counties, and separate crippled children's commissions are members of the Annual Service Plan. Approximately 50 per cent of the income of the Professional Examination Service derives from this source.

The Professional Examination Service now operates on an annual budget of approximately $110,000. Seventy-three per cent of this amount is met by earned income.

Turning now to the road ahead, one is impressed by a group of stumbling blocks which will need to be converted into stepping stones. In June, 1952, the support from the Public Health Service and from the National Foundation for Infantile Paralysis, constituting 28 per cent of the Professional Examination Services income, will terminate. The possibility of an appreciable increase in the number of states participating in the Annual Service Plan is not immediately evident. An increase in fees to states is contraindicated because of reductions in federal funds to state programs. Curtailment of the professional examination program involves retreating along a path which might well end only when it reaches the starting point of June 18, 1941.

The answer seems more likely to reside in putting the resources, both human and material, of the Professional Examination Service to work in new directions. Specifically, there is available a rich reserve of test questions in professional fields which could be utilized in any one or more of the following ways: for selecting candidates for scholarships, stipend, or fellowship awards; for certifying candidates of specialty boards; for qualifying applicants for state licensure, registration, or certification; for determining eligibility for membership in professional organizations; for registration and certification by professional organizations; for personnel selection and inservice training programs in private agencies; and for guidance and evaluation of students in professional programs of study.

The Professional Examination Service has now undertaken to explore these possibilities and is initiating a publicity and promotional program which will, it is hoped, reveal the activity to which it can make its most effective contribution. Present indications are that this may be the field of medical licensing.

VOCATIONAL COUNSELING AND PLACEMENT SERVICE

There is a steady demand for the services of the Vocational Counseling and Placement Service. Interviewing is done in the Association office by various staff members, since there is a fairly steady number of people who come in spontaneously seeking information about

public health and about employment opportunities.

On October 16, 1951, there were 153 candidates active in the file and 221 openings. It appears that a number of positions have been filled in the preceding few months which had been vacant for long periods. The distribution of applicants and positions was as follows:

Categories	*Applicants*	*Openings*
Physicians	32	129
Laboratory	17	22
Non-medical administrators	13	3
Health educators	40	11
Engineers	8	27
Sanitarians	11	11
Dentists	3	4
Statisticians	10	2
Nutritionists	4	4
Veterinarians	2	1
Miscellaneous	13	7
Totals	153	221

The current number of positions and applicants is the least for some time. The number of positions is less than half what it was last year. The applicants are about one-fourth less. While the lack of promotion of the service may be a factor, it probably is not a dominant one. Quite a number of applicants have written that they have secured suitable employment. Salaries are somewhat higher and one gets the impression of a somewhat more favorable employment situation.

FUTURE TASKS FACING THE COMMITTEE

The Committee for many years has had a vital interest in the recruitment of professional personnel, and the chairman of the Committee in last year's report described the contract the American Public Health Association drew up for state participation. Unfortunately, chiefly because of difficulties in having the budget approved in the states, an insufficient number of contracts was signed to enable the Association to launch the large-scale project originally conceived. Parts of the project such as the Vocational Counseling and Placement Service and the distribution of vocational literature are being continued. However, much more needs to be done, especially in acquainting undergraduate students and possibly high school students with the challenges the field of public health offers.

In such a recruitment project as planned by the Association, the Committee could be a guiding body in determining the approach to be made to the faculties and students of the schools at which recruitment is aimed. An important by-product of such approaches to the schools would be to stimulate the faculty and the students to embody the preventive concept in their thinking. This approach has been gaining ground in medical education by integrating the teaching of preventive medicine into the teaching of the clinical subjects such as surgery, ophthalmology, obstetrics. Similarly, the preventive approach might be more strongly emphasized in other professional schools.

The shortage of professional personnel in the public health field continues to be acute. There is not much evidence that it can be relieved in the near future. Therefore, in addition to continuing the efforts toward recruitment, it is important to examine our own house. The questions we might ask ourselves are: Do we use our professional personnel to full advantage? Are certain groups of our professional personnel performing tasks which could just as well or better be done by other trained workers? What subprofessional skills might be utilized? What additional professional workers are needed in the field? Prompted by these questions, the Subcommittee on Educational Qualifications of Administrative Personnel (Non-medical) in Public Health Agencies, under the chairmanship of Dr. V. A. Van Volkenburgh, has concluded that there is a definite place in the public health field for the person trained in administration who does not have a medical background. If a sufficient number of persons thus trained were

available, the administrative procedures of many agencies could be improved and the very scarce medical man power available in the public health field could be utilized to much greater advantage. This would also make the positions in public health more attractive to medical personnel by relieving them of some of the routine tasks generally required from them. It might therefore be in order to examine the positions of various professional categories engaged in public health work in determining how the man power could be better distributed.

A project now being carried on under Dr. William R. Willard's direction at Yale University will be very helpful in answering some of the questions raised above. This project, under grants from the Public Health Service and the National Tuberculosis Association, is examining the content of the jobs of specified types of personnel in state and local health departments and in voluntary health agencies. The results will be important in determining whether realignment of functions of the various groups of public health workers is required.

In one of the previous chairmen's reports it was brought out that the public health family is a growing one which includes an increasing number of professional groups. It appears that each year a new professional group is approaching the Committee on Professional Education in an effort to define jointly the desirable qualifications for the jobs in that field. This year the Committee was approached by the American Physical Therapy Association in this connection and will decide what action to take.

Various types of training are essential for good performance by public health workers. The Committee on Professional Education in the past has defined the necessary academic training required for the majority of public health professions; it has defined what constitutes good postgraduate training in public health in its accreditation program; now, in its program of Accreditation of Field Training Areas, the Committee is defining the content of good standards of training in the field. In addition to field training extending over a longer period of time (one year in the case of public health residencies for physicians), the content and functions of other types of field training need to be explored. This includes preservice and inservice training of professional workers, postgraduate refresher courses, and traineeships. The health departments, schools of public health and other graduate schools, voluntary agencies on all levels, and national official agencies, all are engaged in such programs but these have never been systematically defined. There is much interest in such programs from the point of view of national and international health work.

The Committee on Professional Education will soon be twenty years old, having included in its existence just one-quarter of the life of the Association. It will be agreed, I believe, that the last twenty years of public health history represent by far the most dynamic phase, including as it does the rapid expansion in the United States growing out of the Social Security program, to which public health was tacked on as a small part. It is now apparent to all, in my opinion, that the potential significance of the public health provisions in the Social Security Act of 1935 was really very great and that the basic social security of the United States has been advanced immeasurably through the services stimulated by the modest appropriations under this Act.

Outstanding in these two decades has been the tremendous expansion in professional personnel. It is reflected, for example, in the membership of the American Public Health Association, which is now more than three times larger than when the Social Security Act was adopted. It is shown in the

growth of state and local health departments and in the enrichment of their programs.

To have had a significant part in this expansion through the American Public Health Association is indeed gratifying. A sound foundation has been laid by this Committee on Professional Education through the publication of 25 substantial reports on training and experience qualifications. The Committee also has had a central role in the improvement of personnel methods and in the accreditation of schools of public health and field training areas. We can be proud of the record of my predecessors as chairmen, Dr. W. S. Leathers and Dr. W. P. Shepard, and of the service of their associates on the Committee. It is gratifying that Dr. Shepard has this year been honored with the Presidency of the Association in recognition of the service that he rendered for ten years during his chairmanship of the Committee.

The Committee looks forward with confidence to the next twenty years, recognizing what a priceless advantage we now have in the many thousands of persons who have received excellent training and experience during this period. It is a pleasure to serve in so important a responsibility.

LEROY E. BURNEY, M.D.
State Board of Health
Indianapolis, Ind., *Chairman*

Research and Standards*

THE birth of a new baby, publication of a first volume, or establishment of residence in a new house are accepted as justifiable reasons for anyone to bask momentarily in the warmth of his imagined importance. What I am about to say to you this afternoon does not have to do with the increase of any birth rate, neither will it tell of the joy of some publisher over a best seller nor invite you to step over the threshold of my new domicile. And yet it will deal with all three. Twenty years ago one of my predecessors submitted the first report of the Committee on Research and Standards. During the past twenty years numerous public health classics and best sellers have been prepared by this Committee on Research and Standards. And right now, even though the Committee has carved out a secure niche in the structure of the Association, it is seriously exploring ways by which a larger and more prominent place may be won in the A.P.H.A. mansion.

I do not think that it is presumptuous of me to invite you to join with me in a few minutes of reminiscing. Neither do I think that you will object to relaxing while you contemplate the accomplishments of your committee and its contributions to the services provided by our Association. Tonight we celebrate the twentieth anniversary of the Committee on Research and Standards.

It was in 1929, during the Minneapolis meeting, that the Committee on Research and Standards was authorized by the Governing Council, but it was not until 1930 that it was organized and its first members appointed. The duties assigned to the infant committee included the conduct of research and the development of standards in the technical branches of public health service and training, and the coördination of such research and standardization activities in the Association. Periodic review of existing standards to determine whether or not revisions were indicated completed the responsibilities given to this new member of the A.P.H.A. Those of us who are familiar with the activities of R & S know that these responsibilities have been carried out expertly.

Immediately upon organization, the Committee took over supervision of the already well established laboratory reports:

Standard Methods of Water and Sewage Analysis
Standard Methods of Milk Analysis
Standard Methods for the Bacteriological Examination of Shellfish

Four years later a new Subcommittee on Communicable Disease Control was established, with Haven Emerson, M.D., even as he is today, the chairman. As the interests of the burgeoning committee spread, other technical subjects were brought under the Committee and new topics were explored. As we skim through the records of the Committee we note such subjects as: lead poisoning, cancer, sanitary standards and practices in schools, scientific exhibits, the accuracy of certified causes of death, calendar reform, soil pollution, needed research in public health, the disinfection of air, fluorides and dental caries, and the care of communicable diseases in general hospitals.

Membership on the Committee has given recognition to specialists in all the

* Report of the Chairman to the Governing Council, October 29, 1951.

technical phases of public health. It would require a listing of all the members to cite those eminent men and women who have served public health and the Association through the Committee. You may be interested, though, in knowing who the previous chairmen have been. Abel Wolman was the first, serving from 1930 to 1937. He was followed by L. R. Thompson during the years 1937–1939. Kenneth F. Maxcy masterminded the Committee from 1939 to 1946, moving over to make place for Thomas Francis, Jr., who served from 1946 to 1950.

The Committee has never had a large budget with which to carry out its program. Rather it has depended upon the generous voluntary contributions of all the people who have been associated with it or with one of its subcommittees. It has brought together the individual skills and knowledge of public health leaders and has amalgamated this vast store of ability into a means for advising and guiding the public health team in matters of a technical nature. Fourteen published volumes and numerous shorter reports have provided technical guides for the whole of public health. The value of these reports has been recognized in all parts of the world, so that we can report translations into German, Spanish, Portuguese, and even Siamese. One report has been accepted in principle by all the departments of national defense, by the British and the Scottish Ministers of Health, and the U. S. Army has obtained permission to publish it, with pertinent military information added, for distribution to medical officers. The opinion and support of the Committee have been sought by the Association on many occasions. Honors conferred upon individual members of the Committee include the presidency of the Association and the chairmanship of the Executive Board, the Sedgwick Memorial Medal, and a Lasker Award. Is it any wonder that we have taken this opportunity to pay special respect to you and to the wisdom of the Governing Council that led to the organization of the Committee on Research and Standards in 1930?

It has been a pleasure to recall for you some of the accomplishments of the Committee on Research and Standards. All of us who have had anything to do with the Committee and its activities are proud of what is inscribed on the scroll of Association affairs under the heading "R & S." But we do not now plan to recline in our respective easy chairs to coast along on past glories. The Committee is still very much alive. Right now it is giving serious consideration to new and unexplored interests which may produce a profound change in its program for the next twenty years. The committees that make up R & S are actively continuing studies already in progress.

Indicative of the virility of the Committee are the growing pains of the Coördinating Committee on Laboratory Methods. Known as CCLM, this committee was organized in 1947 for the purpose of fostering and preserving close coöperation among all Association committees developing laboratory methods. It is more than R & S-wide. Its interests are those of any Section working with methods used in laboratory work.

Last year's report told you of the activities of nine individual committees that are integral parts of CCLM. This year that number must be increased to include three more committees formed during the past year. The new committees demonstrate the growing interests of the Coördinating Committee, of the Committee on Research and Standards, and of the Association. They are:

Subcommittee on Examination of Antimicrobial Agents
Subcommittee on Approval of Culture Media
Subcommittee on Laboratory Methods for the Examination of Air

I can give you only the high lights of the report submitted by Friend Lee Mickle, Sc.D., chairman of CCLM. His report to R & S covered 27 pages.

The Subcommittee on Standard Methods for the Examination of Water and Sewage has completed its revision of the sections on bacteriologic and microscopic methods for the revised edition of *Standard Methods for the Examination of Water and Sewage*. In preparing this part of the 10th edition the committee has incorporated the results of its studies on the effect of storage time and temperature on samples of water collected for bacteriological examination. Methods for the detection and enumeration of slime-forming bacteria in water will be included for the first time. The latest information we have received indicates that the 10th edition should be ready for publication by late summer in 1952. I remind you that the 10th edition will be published jointly by the Association, the American Water Works Association, and the Federation of Sewage and Industrial Wastes Associations. You will be asked to approve the new text early next year, following review of the entire volume by a special task force of the Coördinating Committee and publication of proposed changes in the *Journal*. F. Wellington Gilcreas is chairman of the Standard Methods Subcommittee.

Before leaving the subject of *Standard Methods for the Examination of Water and Sewage*, the Committee reports with some pride a translation of the 9th edition into German. The Editorial Board of the *American Journal of Public Health* is considering a request for a translation into Italian also.

A companion Standard Methods committee is the Subcommittee of Archie Robertson, Ph.D., on Standard Methods for the Examination of Dairy Products. This committee is also preparing a 10th edition of *Standard Methods for the Examination of Dairy Products*, with a 1953 publication date. Special studies that are being conducted in preparation of this new edition include:

Comparison of different staining procedures for use in the direct microscopic method of determining the bacterial density in milk and cream.
Development of a milk-free plating medium.
Determination of thermoduric bacteria in milk and cream.
Standardization of agar used in plating media.
Applicability of the methylene-blue reduction test to samples held at 32–40° F. for up to 24 hours.
Bacterial growth inhibitors.

Indicative of the patience and loyalty of laboratory workers who have contributed to the work of the Association and to public health knowledge is the preparation of 11,000 slides to be used in the comparison of staining procedures by one contributor.

Both of the Standard Methods committees will present special sessions at this Annual Meeting.

Harry E. Goresline, Ph.D., is chairman of a committee that is preparing a report eagerly looked for by food laboratories. His Subcommittee on Methods for the Microbiological Examination of Foods has been bringing together reports submitted earlier as reports of sectional committees of the Food and Nutrition Section, revising and adding to them. I hope that the Coördinating Committee, at this meeting, will be able to review the completed manuscript prepared by this subcommittee. Publication of a laboratory volume on methods for the microbiological examination of foods should help materially in placing the examination of these many food products on a level more closely approximating the laboratory examination of water and sewage and of dairy products and the diagnostic examinations made in public health laboratories.

Another committee active in the area of foods is the Subcommittee on Laboratory Examination of Shellfish. Cornelius B. Kelly, Jr., chairman, and his com-

mittee have spent the year making a critical review of the current *Recommended Methods of Procedure for Bacteriological Examination of Shellfish and Shellfish Waters* preparatory to a complete revision of the methods. The committee plans to give full consideration to the application of examination methods to species of shellfish found in areas beyond the Eastern Seaboard. Work has begun on the species of the West Coast. Present indications are that the only changes which may be required will be in the preparation of samples for examination. Another goal of the committee is to obtain conformation of shellfish methods with those to be published in the 10th edition of the *Standard Methods for the Examination of Water and Sewage.*

These four laboratory methods committees have common interests in the development of a plating medium that can be described with specificity. Need for such a reference medium has been recognized because of variations in the ingredients used in media components prepared by manufacturers. During the past year the Association, on the recommendation of CCLM and R & S, has accepted a medium manufactured by the Baltimore Bacteriological Laboratory as being equivalent to the Difco medium specified for agar plate counts in milk and cream work. The newly formed Subcommittee on Approval of Culture Media is working toward a method that can be used to determine the relative productivity of numerous media. The most promising reference medium seems to be the synthetic one prepared by Pelczar and Brown. The Subcommittee has planned a study to explore the use of this synthetic medium for reference purposes. A request for support through a research grant has been made to the National Institutes of Health. The chairmen of the committees mentioned, with Luther A. Black as chairman, make up the committee. We hope that through this committee a reliable reference medium can be found and that some method can be developed for checking the productivity of all media as produced by any of the recognized manufacturers.

You will remember that just before the Annual Meeting in 1950 the 3rd edition of *Diagnostic Procedures and Reagents* was published. This volume is the work of the Subcommittee on Diagnostic Procedures and Reagents. Sales of the volume have been good. The committee had noted one area in which it had not been able to give adequate coverage, that of the care of laboratory animals. A way is now promised for the correction of this need. C. A. Slanetz, Ph.D., has been appointed a referee on the care of laboratory animals. He has been preparing a report that may eventually become an integral part of future editions of *Diagnostic Procedures and Reagents.* The committee has not been able to view the complete report yet, but we hope that in the near future it will be possible to do this and to arrange for its publication. Ralph S. Muckenfuss, M.D., is chairman of the Subcommittee.

Another committee dealing with the laboratory worker is the Subcommittee on Diagnostic Procedures for Virus and Rickettsial Diseases. The laboratory methods volume prepared by this committee, *Diagnostic Procedures for Virus and Rickettsial Diseases,* is just over two years old. Changes have been rapid in the technics covered, and the committee feels that a revision is already called for. Thomas Francis, Jr., M.D., has reformed his committee and is working toward a revision of the book. Progress has been made, but a definite date of publication is not yet in sight. As with so many other contributions to the work of R & S, these seem to be unusually busy times leaving scant opportunity for volunteer activities.

Two of the R & S subcommittees are in an organizational stage. One of these, the Subcommittee on Therapeutic and

Diagnostic Biological Products, has been on the books for several years. A recent reorganization brings promise of an active program. Harold W. Lyall, the newly appointed chairman, and his committee members are outlining the areas of exploration that the committee can reasonably undertake.

The other committee has been handicapped by the very enormity of the task presented to it. C. A. Lawrence, Ph.D., accepted appointment as chairman of the Subcommittee on Antimicrobial Agents with the definite understanding that he could cut the immediate objectives of the committee down to proportions that would give some promise of attainment. A complex subject confronts this committee. It has selected as its first aim a study of disinfectants. Once some order has been brought into that portion of the committee's responsibilities, it will consider other aspects of antimicrobial agents.

John F. Mahoney, M.D., chairman, indicates that the Subcommittee to Develop Reference Methods for Syphilis Serology is still dealing with a live problem despite the decrease in syphilis in some parts of the country. The aim of the Subcommittee has been to develop a reference standard to be used by serology laboratories, either as their standard method or for comparison with any desired technic. You were told last year of the microflocculation test developed by the committee. The committee had hoped to determine a satisfactory level for antigen reactivity. Insufficient clinical cases of early syphilis prevented the necessary studies. An alternative study was conducted comparing the behavior of several of the standard serologic tests, including the VDRL slide test. As a result of the study, the committee proposes the microflocculation test, selected by it as a reference standard only. The committee has prepared its recommendations for use of the test and will discuss it with the Coördinating Committee for Laboratory Methods on Wednesday evening. Two stations have been established where the antigen and saline used in the test can be obtained. These are:

Venereal Disease Research Laboratory
Communicable Disease Center
U. S. Public Health Service
P. O. Box 185
Chamblee, Ga.

Bureau of Laboratories
New York City Department of Health
125 Worth Street
New York, N. Y.

The last subcommittee of CCLM that I wish to speak of, the Subcommittee on Enteric Phage Typing, has Pearl L. Kendrick, Sc.D., as chairman. We have reported on the activities of this committee in the development of 14 Regional Typing Centers to cover all of the United States. In addition, the committee has prepared and made available to each Typing Center a description of methods agreed to by the Subcommittee for typing cultures of *Salmonella typhosa*. Standard preparation for differentiating five additional types recognized by the International Committee on Phage Typing have also been distributed to the Regional Typing Centers. Current studies are being conducted for the improvement of methods for maintaining the stability of Vi-type cultures. One member of the committee is studying symbiotic and Vi phages by electron microscopy.

I think you will agree with me that the Coördinating Committee and its subordinate committees are upholding the traditions of the Association in pooling knowledge for the good of everyone.

As important as are the contributions of CCLM, I must caution you against assuming that a recounting of the activities of the Coördinating Committee closes the book on the affairs of R & S. This is far from correct. The referee on the care of communicable diseases in

general hospitals, Alfred L. Burgdorf, M.D., has carried forward work that may revolutionize the care of communicable diseases in many communities. With the financial assistance of the National Foundation for Infantile Paralysis, a conference attended by representatives from [illegible] national organizations was made possible. The report of the conference will be published in an early issue of the *Journal*. One of the recommendations is that when communicable disease patients need hospitalization, they should be cared for in general hospitals. Another is that the A.P.H.A. take the lead in preparing a manual which will outline methods for the handling of such cases in general hospitals. The Committee on Research and Standards will consider the full report this evening.

Another referee, Donald T. Fraser, D.P.H., with the help of an *ad hoc* committee under the chairmanship of Gaylord W. Anderson, M.D., has considered the relationship of the incidence of polio and certain immunizing injections. The report of the *ad hoc* committee appeared in the June, 1951, issue of the *Journal*. We know from inquiries received by the Central Office that the report has been of great help to many health officers. The subject is being pursued further.

Last year when Dr. Francis reported the publication of the 7th edition of our "best seller," *The Control of Communicable Diseases in Man*, it was thought that we would have little more to report than the continued widespread use of the volume. Our report is more exciting than that. The Pan American Sanitary Bureau has translated the volume into Spanish and is preparing a Portuguese translation. In addition, permission has been granted by the Editorial Board to the Surgeon of the Army to reprint the report, with suitable credit, for use by Army medical officers. This book has just come off the press. To the discussion of each disease has been added two new sections: one on therapeutics and one on Army directives that refer to the control of the disease. (It has been indicated in the reprint that these additions were made by the Army and were not in the original A.P.H.A. recommendations.) Haven Emerson, who has been chairman of the Subcommittee on Communicable Disease Control since the organization of that committee, has good reason to feel proud of the contributions the report has made to the prestige of the Association, to the improvement of public health, and to better international understanding.

No report of the Committee on Research and Standards would be complete without recognition of the work of the Subcommittee on the Hygiene of Housing. This committee, with C.-E. A. Winslow, Dr.P.H., as chairman, has carried on one of the important phases of the area of responsibility given to R & S—that of research. Out of this committee have come reports that have given health departments, planning boards, redevelopment bodies, sociologists, and others interested in the subject of housing the first objective means for determining the quality of housing. The effect of housing on health has been brought before the public by this committee. Its last series of reports has given the public *Standards for Healthful Housing*. In the spring of 1951, the third and last in the series, *Construction and Equipment of the Home*, was published. The committee has completed a long-expected report, "A Model Housing Code."* This report will be considered by the Committee on Research and Standards this evening. It should provide health departments and other official bodies responsible for housing with a sound basis for a local housing code.

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* Currently available in published form as *A Proposed Housing Ordinance Regulating Supplied Facilities, Maintenance, and Occupancy of Dwellings and Dwelling Units*. New York: American Public Health Association, 1790 Broadway, New York 19, N. Y. 50 cents.

The committee was able to contribute in a large way to the success of the Milbank Memorial Fund conference this year, particularly to the section on Housing and Health. The immediate project before the committee now is preparation of a report on housing for the aged and infirm. It is a pleasure to recognize the work of this committee and to pay public respect to the Milbank Memorial Fund, which has contributed so generously to the financing of the work of the committee during the past 11 years.

Just as surely as any of you eat in a public restaurant is the report of the Subcommittee on Sanitation of Food Utensils of interest to you. Walter D. Tiedeman and the rest of his committee have been studying the adequacy of the swab rinse technic presented three years ago and adopted as an Association report. The committee has also been cooperating with the National Sanitation Foundation and with other national organizations in improving the design of dishwashing machines. The committee is keenly interested in, and is working closely with, the newly formed CCLM Subcommittee on Antimicrobial Agents to the end that better methods may be developed for determining the bactericidal effectiveness of commercial germicides used on eating utensils. The committee is coöperating with the National Sanitation Foundation in studies to determine the relative ease of cleaning and sanitizing food utensils made of materials other than vitrified china. Attention is also being given to educational methods which would assist in obtaining better food utensil washing in public eating places.

We have already referred to the research work performed by the Subcommittee on the Hygiene of Housing. Another committee is actively engaged in basic research. It is the Subcommittee on Laboratory Research on Pertussis, with Pearl L. Kendrick, Sc.D., as chairman. This committee has completed research on administrative technics related to the control of pertussis and is now continuing studies in the antigenic problems involved in the use of pertussis vaccines. During the past year activities have centered around several investigations. A final report on experiments to determine the cross-protection of various vaccines is in preparation. Other studies show that suspensions of Culture 10–536, grown on Bordet-Gengou medium and killed and preserved with merthiolate still had good mouse-protective capacity after refrigeration storage for 5 years and 8 months. Other samples are in continued storage for further testing. Other studies are directed toward a determination of the effect of different killing agents used in the preparation of vaccines in 1944. The committee is working with the Biologic Section of the American Drug Manufacturing Association to study the stability of biologic products. Still other studies of the Subcommittee have been concerned with the practical problems related to the production of *Hemophilus pertussis* vaccine. Finally, the committee has continued its investigation into the suitability of *H. pertussis* and parapertussis cultures obtained in diagnostic services for improving pertussis vaccines. We are glad to acknowledge the continued support of this important work by the ten manufacturing biological concerns that have provided the financial support for these studies.

The Subcommittee on Morbidity Registration and Statistics, under the chairmanship of Paul M. Densen, D.Sc., has decided to develop a statement for the Association which will outline the kinds of morbidity statistics required by public health administrators and the conditions under which it is desirable to collect various types of statistics at different organizational levels. It is believed that in so doing funds may be more readily obtainable by administrators to carry out such studies. The

Subcommittee wishes to remain in a position to serve as a clearing house for studies, rendering an advisory and consultant service upon request and indicating areas where further work is desirable.

The Subcommittee on Air Sanitation, under the chairmanship of Dr. Alexander Langmuir, reports that they "have been essentially quiescent this year."

You might hear more about the work the Committee on Research and Standards is doing in furthering the preparation and adoption of a uniform plumbing code or about the proposal the Committee is considering for the adoption of a new procedure in artificial respiration. It would not be hard to hold you for as many more minutes in recounting other generous contributions of the committees and the individuals that make up R & S. I cannot thank them for what they have done. Neither can you. It is only from all those people who receive the benefits of modern public health through improved technical standards and procedures that adequate thanks can be given.

WILLIAM MCD. HAMMON, M.D.
University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pa., *Chairman*

BCG Vaccination*

Committee on Administrative Practice

1. BCG vaccination when carried out under proper conditions is safe.

2. The vaccine should meet acceptable standards.

3. Its administration under currently recommended methods is effective in converting a substantial proportion of nonreactors to tuberculin to reactors.

4. Many reports indicate that such conversion represents some evidence of relative resistance.

5. There is no definite information indicating the degree or duration of such resistance.

6. Vaccination with BCG should not be considered a substitute for other control methods, such as the isolation of the infectious case.

7. Because of the need for further research and follow-up data, distribution of the vaccine should for the present be under the supervision of an official health department, medical school, or research institution.

8. In general, the use of the vaccine should be considered only for nonreactors to tuberculin, especially for nurses, resident physicians and hospital employees, or others having contact with patients in hospitals; also, members of households in which there is a case of tuberculosis.

HERBERT R. EDWARDS, M.D.,
386 Fourth Ave., New York, N. Y.
Chairman
ROBERT J. ANDERSON, M.D.
MARY V. DEMPSEY
ESMOND R. LONG, M.D.
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ROBERT E. PLUNKETT, M.D.
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* Prepared by the Study Committee on Tuberculosis Control Procedures of the Subcommittee on Evaluation of Administrative Practices. Adopted as a statement of the Committee on Administrative Practice at its meeting in San Francisco, October 29, 1951.

The Veterinarian in Public Health*

Committee on Administrative Practice

THE American Board of Veterinary Public Health has defined veterinary public health as "all community efforts influencing and influenced by the veterinary medical arts and sciences applied to the prevention of disease, protection of life, and promotion of the well-being and efficiency of man."† All such efforts undertaken by the health department and other agencies are within the scope of veterinary medicine and require professional guidance, which the veterinarian can and should provide.

The veterinary aspects of public health relate to animal diseases transmissible to man. There are more than 80 such animal diseases. For many of these, such as brucellosis, leptospirosis, rabies, and Q fever, eradication or control of the disease in animals is the only means of eliminating human infection. A few diseases of animals are contracted from man and in turn are transmitted back to man (e.g., milk-borne septic sore throat and cysticercosis), the animal acting as an intermediate host. Tuberculosis, anthrax, and tularemia are among those diseases that affect several species of animals. Many diseases are spread from animal to animal and ultimately to man by arthropod vectors, while others are contracted by man either through direct contact or by consumption of meats and food products of animal origin.

The veterinarian is trained in the science of animal diseases. In fact, he is the only member of the public health team who is so trained. He knows the symptomatology, pathology, epizoötiology, methods of control and prevention, and the effect of animal diseases on agricultural economy. Like the medical graduate, he also understands the need for further training and/or supervised experience in public health methods, practices, and objectives. With these he is capable of rendering services not available from other members of the public health team. He is also qualified to consult with and advise various members of the public health organization relative to animal food products or human diseases of suspected origin.

Veterinary public health programs may vary in accordance with size and jurisdiction of the health department, local or regional importance of specific animal diseases, public demand, available veterinary personnel, and the interest of the public health administrator.

Basically, veterinary public health involves at least six areas:

1. *Administration and consultation*—This includes the direction and supervision of all persons employed in veterinary public health. The veterinary public health program in local and state health departments is mainly concerned with preventive medicine and should be a part of that activity.

The veterinarian is a technical adviser and consultant to the public health administrator on preventive medicine, food hygiene, legislation, and health education which relate to animal diseases transmissible to man.

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* Prepared by the Study Committee on Veterinary Public Health of the Subcommittee on State and Local Health Administration. Adopted as a statement of the Committee on Administrative Practice at its meeting in San Francisco, October 29, 1951.

† The quoted definition has been adopted by the World Health Organization.

2. *Disease control*—This includes participation in the development of appropriate methods to prevent the occurrence and transmission of those diseases common to man and animal (zoönoses). Such a program should be inaugurated in conjunction with other agencies having a related interest in the problem. The establishment and maintenance of an animal disease reporting system is vital to an effective disease control program. Reporting should be established so that all interested agencies such as state agriculture and livestock sanitary boards as well as national and international agencies can utilize the data.

3. *Food hygiene programs*—These include inspection of all food products of animal origin and other food products as the occasion may demand, as well as the supervision of the health of dairy animals and the sanitary handling of food products. They should include clinical and pathological examination and field testing of food-producing animals for communicable diseases.

4. *Disease investigation and research*

Investigation of animal diseases that may become of sufficient prevalence or importance in man as to warrant such study. This may include collaboration with epidemiologists, bacteriologists, parasitologists, entomologists, or others in the health department or in other agencies. The problems related to food technology and the handling of animal products are also studied.

Research will usually be conducted by state or federal government agencies, universities and private medical foundations, or commercial companies. It may involve independent research or joint studies with others working on the human or vector angle of the same disease. It also includes study of diseases as produced in experimental animals.

5. *Public health education*—Emphasis should be given to utilizing the public health veterinarian in the field of public health education and the dissemination of knowledge relative to diseases of animals transmissible to man and their prevention and control.

6. *Interagency liaison*—Animal disease problems of public health significance can be resolved more effectively with close liaison and coöperation between the veterinary practitioners and the health departments. All practising veterinarians are engaged in livestock disease control programs, many of which are of public health importance. Mutual benefits will result from close liaison between the health department and federal and state agencies responsible for livestock disease control, agriculture, wildlife conservation, and food and drug control. Livestock producers and marketing associations encounter veterinary problems of public health significance in the formulation of programs, policies, and in practices. Information about public health objectives, policies and programs will encourage coöperation and make it possible.

MARTIN BAUM, D.V.M.
RICHARD F. BOYD, M.D.
I. A. MERCHANT, D.V.M.
JOHN H. O'NEILL
JAMES H. STEELE, D.V.M.
OSCAR SUSSMAN, D.V.M.
F. A. TODD, D.V.M.
C. D. VAN HOUWELING, D.V.M.

Coördinating Committee on Laboratory Methods*

Committee on Research and Standards

THE Coördinating Committee on Laboratory Methods was created at the 1947 Annual Meeting and since that time has functioned actively under the guidance of the Committee on Research and Standards. Prior to the 1947 Annual Meeting, the Committee was known as the Coördinating Committee on Standard Methods of the Laboratory Section of the Association. The two committees have had a long and distinguished history of accomplishment in the field of laboratory procedure. That record is adequately set forth in a long series of published annual reports and in the publications of the subcommittees and so is not dealt with here. Succinctly, the aims and purposes of the Coördinating Committee are to foster and preserve a liaison among the committees of the Association that sponsor laboratory methods and to integrate those activities with those Sections of the Association concerned with the use of or the application of public health laboratory procedures.

At the close of another year, the Coordinating Committee on Laboratory Methods can again point with extreme satisfaction to continuing accomplishments of real worth to the Association and its members. The CCLM is a coordinating and planning group and so is unable to take more than a modicum of credit for the accomplishments of the subcommittees it sponsors. It delights in its role of relaying its summation of these attainments to the Committee on Research and Standards and through that parent committee to the membership of the Association. It takes credit only for stimulation and correlation of the work.

It is hardly to be expected that the reader of this report can more than vaguely sense the hours of hard work and the great measure of loyalty and devotion to the cause of public health laboratory accomplishment that have been contributed by the many men and women who, working collectively or alone, have had an important part in producing the host of worthwhile achievements that are recorded in this report or that may be glimpsed through it. It is regretted that space in this report does not suffice to give credit where due or even to name the persons who have contributed to the results reported herein; only the names of the subcommittees, with the chairman of each, are listed in this report. Reference to the committee lists published annually by the Association is suggested as the best means of ascertaining by whom the work has been done.

Since the last annual report of the CCLM was published, three new sub-

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* Report of the Chairman.

COÖRDINATING COMMITTEE ON STANDARD METHODS.
Organized under the Laboratory Section, 1921. Established 1933.

COÖRDINATING COMMITTEE ON LABORATORY METHODS.
Organized under the Committee on Research and Standards, 1947.
Published report, *Year Books*, 1949–1950; 1950–1951.

committees have been authorized:

Subcommittee on the Examination of Antimicrobial Agents
Subcommittee on Approval of Culture Media
Subcommittee on Laboratory Methods for the Examination of Air

A meeting of the Committee took place on November 1, 1950, while the Annual Meeting was in session in St. Louis, and another meeting was held on February 21, 1951, at the offices of the Association in New York City. At least one meeting of each of the subcommittees, or of nearly all of them, was held during the year. A large proportion of the activity was conducted by correspondence.

The subcommittees that the CCLM supervises are listed below in the order of the length of time each has served the Association:

Subcommittee on Standard Methods for the Examination of Water and Sewage, F. Wellington Gilcreas, *Chairman*
Subcommittee on Standard Methods for the Examination of Dairy Products, A. H. Robertson, Ph.D., *Chairman*
Subcommittee on Laboratory Examination of Shellfish, Cornelius B. Kelly, Jr., *Chairman*
Subcommittee on Diagnostic Procedures and Reagents, Ralph S. Muckenfuss, M.D., *Chairman*
Subcommittee on Diagnostic Procedures for Virus and Rickettsial Diseases, Thomas Francis, Jr., M.D., *Chairman*
Subcommittee on Therapeutic and Diagnostic Biological Products, Harold W. Lyall, Ph.D., *Chairman*
Subcommittee on Methods for the Microbiological Examination of Foods, Harry E. Goresline, Ph.D., *Chairman*
Subcommittee on Reference Methods for Syphilis Serology, John F. Mahoney, M.D., *Chairman*
Subcommittee on Enteric Phage Typing, Pearl L. Kendrick, Sc.D., *Chairman*
Subcommittee on the Examination of Antimicrobial Agents, C. A. Lawrence, Ph.D., *Chairman*
Subcommittee on Approval of Culture Media, Luther A. Black, Ph.D., *Chairman*
Subcommittee on Laboratory Methods for the Examination of Air (Chairman not appointed)

A summary of the activities of these committees during 1950–1951 follows:

Subcommittee on Standard Methods for the Examination of Water and Sewage

The Subcommittee has continued its intensive work for the development of Part IV (bacteriologic methods) and Part III (microscopic methods) for the forthcoming 10th edition of *Standard Methods for the Examination of Water and Sewage*. The other portions of the volume are being prepared by committees of the American Water Works Association and the Federation of Sewage Works Associations.

A year ago, the Subcommittee undertook a study of the effect of storage time and temperature on samples of water collected for bacteriologic examination. The Subcommittee held a meeting in Amherst, Mass., June 13–15, 1951, reviewed the preliminary draft of Part IV, and decided upon many changes which are being made in the text. In response to numerous requests, an attempt has been made to develop tentative methods for the detection and enumeration of slime-forming bacteria in water. At the request of the Subcommittee, the Coördinating Committee has appointed an interim review committee to which the manuscript of the 10th edition will be referred for review before it is submitted to the Committee on Research and Standards prior to publication.

The Subcommittee feels that with the completion of the manuscript for the 10th edition its work really commences again, since it is planned to continue intensive investigations of bacteriologic and microscopic procedures for the examination of water with a view to their improvement and development, preparatory to publication of an 11th edition.

Subcommittee on Standard Methods for the Examination of Dairy Products

Under the leadership of this subcom-

mittee and over a long period of years, nine editions of *Standard Methods for the Examination of Dairy Products* have been published by the Association, the 9th in 1948. Since that date the Subcommittee members have been preparing actively for a 10th edition. Although the 9th edition received high commendation as being an unusually up-to-date and comprehensive treatise, the dairy industry field is so rapidly changing that laboratory men must be exceptionally alert to keep up with changing methods of analysis.

We are indeed fortunate to have a committee well equipped and ably supervised to represent the interests of the Association in keeping the standard methods in this field of laboratory practice at the high level maintained in the past, when perhaps the task was less difficult.

The need to compare different staining procedures for use in the direct microscopic method of determining the bacterial density in milk and cream samples was recognized soon after the 9th edition of *Standard Methods for the Examination of Dairy Products* was published. Some scientists have reported on the fallibility of the previously recognized staining methods under certain conditions of use; others have sponsored improved staining methods, either prior to or following publication of the 9th edition. At a special conference held early in 1951 under the supervision of this Subcommittee, plans were organized under the guidance of Dr. Nathan Mantel, Biometrician, National Cancer Institute, Bethesda, Md., for an objective comparison of the suitability of six staining methods, among which is included, primarily for reference purposes, a slight modification of the original 23 per cent alcoholic methylene blue staining technique.

Effective on February 20, 1951, the Association formally accepted the optional use of either Difco's Tryptone glucose extract agar, dehydrated, No. B2, or BBL's Trypticase glucose extract agar, dehydrated, No. 183-B, as the official plating medium for determining the standard plate count on milk and cream by the agar plate method.

Subcommittee on Laboratory Examination of Shellfish

The Subcommittee has been active during the year in a careful critical review of the *Recommended Methods of Procedure for Bacteriological Examination of Shellfish and Shellfish Waters* in preparation for a revision to be completed during the coming year. It was felt that five years' experience with the procedures should result in the indication of certain deficiencies and, further, that the revision should be made to conform with the changes that are contemplated in the *Standard Methods for the Examination of Water and Sewage*. It is of particular importance that the shellfish methods coincide as nearly as possible with those for the bacteriological examination of water. The revision should therefore be delayed until firm decisions are made concerning changes in the procedures for water. Among the recommendations of the committee is included one suggesting that consideration should be given the application of the method to species of shellfish occurring in areas other than the Eastern Seaboard.

Subcommittee on Diagnostic Procedures and Reagents

As less than a year has elapsed since the 3rd edition of *Diagnostic Procedures and Reagents* was published, the major activity of the Subcommittee has of necessity been an attempt to evaluate this volume and consider possibilities for improvement.

A refereeship on the care of laboratory animals was established temporarily under the aegis of this committee and, as reported last year, Charles A. Slanetz,

Ph.D., was appointed to this refereeship. Dr. Slanetz has submitted the following report, which indicates considerable progress during 1950–1951 in getting this activity organized:

Since the last committee meeting, some progress has been made on the proposed handbook on the care of laboratory animals. Several research workers have been invited to contribute their ideas and submit brief manuscripts on species of animals with which they are particularly conversant.

As previously reported, the aim of the handbook is to offer a brief and concise guide on the practical care of laboratory animals with a view toward standardizing their housing, feeding and care. For more detailed or more complete information, comprehensive books are available on the care and breeding of laboratory animals.

Subcommittee on Diagnostic Procedures for Virus and Rickettsial Diseases

A meeting of the Subcommittee was held in November, 1950, to discuss plans for a 2nd edition of *Diagnostic Procedures for Virus and Rickettsial Diseases*, the 347-page manual that was brought out by this subcommittee in 1949. That manual had wide acceptance, but in this rapidly growing field, frequent revision of books of methods is to be expected. The chairman reports that it has been difficult under the present unsettled conditions in this country to get the work on the revision organized, although the general principles have been formulated, but he expects early this fall that the group of experts in this field who are members of the Subcommittee will complete the arrangements for the 2nd edition of this book.

Subcommittee on Therapeutic and Diagnostic Biological Products

It was reported for last year that this subcommittee had been somewhat handicapped during the year because of unexpected changes in official positions held by the chairman and certain members of the Subcommittee, with the result that some of the members were no longer intimately connected with the manufacture of biological products. At the 1950 Annual Meeting of the Association it was decided that the CCLM should be requested to set up the Subcommittee again under a new chairman, with authority given the Subcommittee to fashion its program along any new lines that might seem advisable. The CCLM acceeded to the request of this subcommittee. Harold W. Lyall, Ph.D., was appointed chairman during the year. He has been actively at work selecting the personnel of the Subcommittee and establishing the field of work following reorganization.

Subcommittee on Methods for the Microbiological Examination of Foods

Last year this subcommittee reported that much progress had been made toward the accomplishment of its goal —preparation of a manual of laboratory methods and procedures for the microbiological examination of a comprehensive number of food products. The chairman reports that during the year he has completed a revision of the manuscript and has referred it back to the referees and members of the Subcommittee, with questions and comments. It seems probable that before the end of another year this proposed volume may become a reality.

Subcommittee To Develop Reference Methods for Syphilis Serology

This subcommittee has been active since it was organized in November, 1948, following the passage of a motion at a meeting of the Conference of State and Provincial Public Health Laboratory Directors asking this Association to establish such a committee under the auspices of the CCLM. The function of such a committee was to deal with and improve a confusing situation in the realm of syphilis serology, where

there existed a number of laboratory methods and a coincidental lack of understanding on the part of practising physicians about the limitations of the various tests in use, with a consequent need for standard or approved technics that could be used for reference. The Subcommittee makes the following report:

The aim of the Subcommittee To Develop Reference Methods for Syphilis Serology from the time of its establishment has been to develop a reference standard to be used by a serology laboratory, either as its standard method or for comparison with any desired technic. It was felt that the first problem of the Subcommittee was to develop a reference standard microflocculation test. The committee members, as a result of independent investigation and after studying various proposals, agreed upon a microflocculation technic. The establishment of a satisfactory level for antigen reactivity, to be used in conjunction with the technic developed by this subcommittee, was considered from several points of view.

An attempt was made to set up a clinical laboratory study whereby the most satisfactory antigen level could be determined. The rapid decrease throughout the country in the number of patients with early syphilis has made it difficult to organize this clinical study, since it would require investigating a large series of known dark-field positive cases of syphilis. This conclusion was arrived at after consultation with the Venereal Disease Division of the U. S. Public Health Service. However, an alternative solution was evolved which is based on the premise that the Subcommittee is offering a reference standard only.

The following summarizes the reasoning and conclusions which this committee recommends:

Dr. John Cutler, of the Venereal Disease Division of the U. S. Public Health Service, has just completed the analysis of a study conducted at Staten Island, N. Y., by the Venereal Disease Research Laboratory of the U. S. Public Health Service. The analysis was based upon a study of the comparative behavior of the Kline Exclusion, Kline Diagnostic, Mazzini, Kahn Standard, Hinton, Eagle, Kolmer, and VDRL slide tests, the last test utilizing antigens set at two levels of sensitivity. The two VDRL slide test antigens were adjusted respectively to the present and to the more sensitive past levels of sensitivity.

The clinical material consisted of 417 patients with dark-field positive primary syphilis, who met the following criteria:

1. The diagnosis was based upon the finding of *Treponema pallidum*.
2. The patient had not previously had treatment for syphilis.
3. The duration of the chancre was known.

As a result of excellent patient coöperation, it was possible to follow 33 individuals, seronegative when first seen, into the state of complete seropositivity before the onset of specific antisyphilitic therapy.

Dr. Cutler concludes as a result of this analysis that no single test, or even pair of tests, was found to pick out all the samples of serum showing serologic reactivity. There is a steady progression toward seropositivity by the entire group of tests considered, if the patient is allowed to develop seropositivity without treatment. The most highly sensitive tests, in general, are the earliest to become positive, and the less sensitive tests become positive at a later date. However, complete serologic reactivity by each procedure under consideration was observed to be established within a period of 35 days after development of the chancre. Finally, Dr. Cutler concludes that so far as could be seen from this study, no single one of the above diagnostic procedures showed any significant superiority with respect to degree of reactivity in early syphilis.

In view of this study, the microflocculation test to be chosen by this subcommittee must be considered, as herein mentioned, as a reference standard only. The criteria for antigen reactivity must be based upon a number of considerations, as follows:

1. It must be used with the technic previously agreed to by this subcommittee.
2. It must be suitable for use by public health laboratories, as proved by experience.
3. The antigen should be readily available and manufactured by commercial companies.

Therefore, the following are the recommendations of this subcommittee:

1. The attached technic is to be considered as a "Standard Method for Performing the Microflocculation Test for Syphilis."
2. The antigen and saline to be used with this technic are to be those currently employed in the VDRL slide test.
3. Two repositories of this antigen are to be authorized:

Venereal Disease Research Laboratory
Communicable Disease Center
U. S. Public Health Service
P. O. Box 185, Chamblee, Ga.

Bureau of Laboratories
New York City Department of Health
125 Worth Street, New York, N. Y.

The function of these repositories will be to maintain the standard reagents and to distribute samples of reagents for check-testing purposes only. The Subcommittee To Develop Reference Methods for Syphilis Serology, together with the two repositories, will establish procedures for standardization of the reagents. The two repositories will exchange samples with each other to assure the quality of the standard reagents.

4. A serology subcommittee should be maintained permanently. This subcommittee should function as a supervisory committee through which will funnel all problems relating to the maintenance of the reference standard. Also, the subcommittee should continue the study of problems relating to standardization of serologic tests for syphilis. It should be authorized to coöperate with the Serology Committee of the World Health Organization in order to continue studying the problems involved in the standardization of syphilis serology.

METHOD FOR PERFORMING THE MICROFLOCCULATION TEST FOR SYPHILIS *

EQUIPMENT

1. Rotating machine, Boerner type (A. H. Thomas) or equal, set at 180 r.p.m.
2. Ring maker (the Fisher rapid ring maker may be used) which will prepare paraffin ring slides similar to the Kline slide.
3. Slide holder to accommodate 2 by 3 inch slides.
4. Glass slides, flat bottom, 2 by 3 inches, with paraffin rings of 15 mm. inside diameters.
5. Bottles, glass-stoppered or screw-capped (tin foil lined), round, 30 ml.
6. Syringes, Luer type, 1 or 2 ml.
7. Hypodermic needles:
   a. 23-gauge needles, calibrated to deliver 100 drops of saline per ml. (Holding the syringe almost vertically will usually deliver the required amount).
   b. 25-gauge regular-bevel needles, *calibrated* to deliver 75 drops of antigen emulsion per ml. (Hold syringe horizontally, bevel down).
8. Pipettes, 0.2 ml. graduated in 0.01 ml. to deliver serum.
9. Microscope, 100 X magnification.

PREPARATION OF ANTIGEN

The antigen consists of:

Cholesterol—0.9 per cent (Pfanstiehl-precipitated from absolute ethyl alcohol, or equal quality)
Cardiolipin—0.03 per cent
Lecithin—Quantity necessary to maintain reactivity of standard antigen

PREPARATION OF SERUM

Clear serum is heated in the 56° C. water bath for 30 minutes. All serums containing visible particles after the heating period should be recentrifuged.

Serums tested more than 4 hours after the original heating period should be reheated for 10 minutes in the 56° C. water bath.

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* Prepared by the Subcommittee To Develop Reference Methods for Syphilis Serology of the Coördinating Committee on Laboratory Methods. Accepted by the Coördinating Committee on Laboratory Methods at its meeting in San Francisco, October 31, 1951, and recommended for publication in the *American Journal of Public Health* as a reference method.

THE SALINE SOLUTIONS

1. 0.9 per cent saline solution is prepared by carefully weighing 900 mg. of previously oven-dried sodium chloride, adding the dried NaCl to 100 ml. of distilled water. Filter the saline before use.

2. Buffer saline—formaldehyde, neutral, reagent grade, ml..... 0.5
   Secondary sodium phosphate ($Na_2HPO_4 + 12H_2O$), gm..... 0.093
   Primary potassium phosphate (KH_2PO_4), gm..... 0.170
   Sodium chloride, A.C.S., gm..... 10.0
   Distilled water, ml..... 1,000.0

The solution yields potentiometer readings of pH 6.0 ± 0.1 and is stored in screw-capped or glass-stoppered bottles.

PREPARATION OF SLIDES

Paraffin rings are prepared (as for the Kline test) by means of the ring maker (see "Equipment").

All slides are cleaned as follows:

1. New slides are cleaned with Bon Ami. The Bon Ami is allowed to dry and is then removed with a soft cloth.
2. Used slides are cleaned by first removing the paraffin with hot soapy water, then washed with soap and water and Bon Ami applied as described for new slides.
   If slides are properly cleaned, serum will spread unaided when placed within the paraffin ring. If serum does not spread, do not use the slide, as it has not been sufficiently cleaned.

PREPARATION OF ANTIGEN EMULSION

1. Pipette 0.4 ml. of buffered saline to the bottom of a 30 ml. round, glass or screw-cap stoppered bottle.
2. All 0.5 ml. antigen (from the lower half of a 1.0 ml. pipette graduated to the tip) directly onto the saline while continuously but gently rotating the bottle on a flat surface.

NOTE: Antigen is added drop by drop, but rapidly, so that approximately 6 seconds are allowed for each 0.5 ml. antigen. Pipette tip should remain in upper third of bottle and rotation should not be vigorous enough to splash saline onto pipette.

3. Blow last drop of antigen from pipette without touching pipette to saline.
4. Continue rotation of bottle 10 more seconds.
5. Add 4.1 ml. buffered saline from 5.0 ml. pipette.
6. Place top on bottle and shake vigorously for approximately 10 seconds.
7. Antigen emulsion is then ready for use and may be used during 1 day.

All antigen emulsions should be tested by using known positive and negative serum, as well as with saline. The particles of the antigen emulsion in the negative serum and the saline control must not appear too large. If the antigen particles are not of satisfactory size (as determined by experience), the emulsion should be discarded.

THE SERUM TEST

1. Pipette 0.04 ml., 0.02 ml., and 0.01 ml. heated serum to the 1st, 2nd, and 3rd rings of the paraffin slides.
2. Add with needle and syringe 2 and 3 drops of 0.9 per cent saline to the 2nd and 3rd rings respectively. (Each drop must contain 0.01 ml. This is accomplished by using the 23-gauge needle as explained in the section on "Equipment.")

3. Add 1 drop of antigen emulsion to all three rings. (Each drop contains 1/75 ml., using the 25-gauge needle, holding syringe horizontally, and beveling down, as explained in the section on "Equipment.")
4. Rotate the slide for 4 minutes at 180 r.p.m. on the Boerner-type rotator.
5. Read test immediately after rotation.
6. If clumps are present in the 3rd ring, then dilute the serum 1:8 (1 part serum to 7 parts 0.9 per cent saline) and repeat the test with the diluted serum.

The following tabulation summarizes the serum test:

	Paraffin Ring Number						
	1	*2*	*3*		*4*	*5*	*6*
Serum ml.	0.04	0.02	0.01		0.04	0.02	0.01
Saline (each drop, 1/100 ml.)	—	2	3	Serum	—	2	3
Antigen emulsion (each drop, 1/75 ml.)	1 drop	1 drop	1 drop	diluted 1:8	1 drop	1 drop	1 drop
Serum dilution	1:1	1:2	1:4		1:8	1:16	1:32

NOTE: If clumps are present in ring 6 (1:32 dilution), dilute serum 1:64 and repeat test. A negative reaction must be obtained before test is concluded.

REPORTING TEST RESULTS

Read tests microscopically, at 100X magnification.

The result of the reaction between the serum and the antigen is considered to be either as "reactive" or as "nonreactive."

"Reactive" results are reported as such if definite clumps appear in the paraffin ring.

No clumping, or slight roughness of the antigen particles, is reported as "nonreactive."

All "reactive" results are reported by indicating the highest dilution of serum which will cause the antigen particles to clump. For example:

Reactive Results 1:1 (or 1 dilution)
Reactive Results 1:2 (or 2 dilutions)
Reactive Results 1:4 (or 4 dilutions), etc.

Subcommittee on Enteric Phage Typing

The 1950 report of this subcommittee announced the establishment of regional centers in the United States for typing *Salmonella typhi* and the provision for typing coverage in the Territories of Hawaii and Alaska. This information was transmitted by Dr. P. R. Edwards to the International Committee for Enteric Phage Typing, meeting at Rio de Janeiro during the Fifth International Congress for Microbiology in August, 1950. The directors of regional centers were accepted as members by the International Committee for Enteric Phage Typing and this action was approved by a plenary session of the Congress.

During April, 1951, the International Center for Phage Typing, in London, announced that five new Vi-phage preparations were ready for distribution together with homologous cultures. These, it is hoped, will reduce the number of untypable strains of the typhoid bacillus. The new preparations were sent first to Dr. Edwards, who in turn distributed them to the regional centers of the United States.

A business meeting of the Subcommittee was held on May 29, 1951, during the annual meeting of the Society of American Bacteriologists. A decision to investigate the stability of phage types of *S. typhi* in the lyophile state was

made by several members. Since May, successful studies carried out under the direction of A. H. Lazarus, Ph.D., have demonstrated Vi phage of several types by the electron microscope. Symbiotic phage has not yet been demonstrated by this method.

Subcommittee on the Examination of Antimicrobial Agents

This subcommittee was authorized this year after a period of discussion in the CCLM as to the field of activity of such a committee. The need for consideration of methods and procedures for this phase of laboratory technic has been discussed in recent annual reports of the CCLM.

Dr. C. A. Lawrence of the University of Michigan has just been appointed as chairman of this Subcommittee. He has recently contacted several well known authorities to serve as members. Dr. Lawrence proposes to start the Subcommittee's work by formulating an approach to the problems in connection with test methods for evaluation of antimicrobial agents, beginning with disinfectants.

Subcommittee on the Approval of Culture Media

At a meeting held in New York City on February 21, 1951, the Coördinating Committee on Laboratory Methods recognized a need to coördinate studies in the use of media and authorized the establishment of a Subcommittee on Approval of Culture Media, to be composed of the chairmen of the committees most intimately involved. These committees were listed as: Subcommittee on Standard Methods for the Examination of Water and Sewage, Subcommittee on Standard Methods for the Examination of Dairy Products, Subcommittee on Laboratory Examination of Shellfish, and Subcommittee on Methods for the Microbiological Examination of Foods. The newly authorized Subcommittee on Laboratory Methods for the Examination of Air will also be added to this list as soon as a chairman has been appointed and the new committee formed.

An organization meeting of this subcommittee was held in the Association offices, 1790 Broadway, New York, N. Y., on June 11, 1951. The Subcommittee appointed L. A. Black, Ph.D., chairman, and Earle K. Borman, vice-chairman, membership to consist of the chairmen of the laboratory methods committees mentioned, or their authorized representatives, and any other persons appointed by the chairman of the CCLM. The Subcommittee will work as a coördinating and planning committee. The chairman of each standard methods committee represented on the Subcommittee will be asked to undertake studies to compare the synthetic medium with the particular plating medium recognized for use in that field.

It is planned to study the reproducibility of different batches of the synthetic medium, to simplify its composition if possible, and at the proper time to recognize a chemically reproducible synthetic medium which can be used as a reference standard to determine whether or not successive factory batches of nonsynthetic plating media are uniform and conform in colony productivity with the original standard. The cost of the present synthetic medium is about five times that of the currently recognized nonsynthetic medium, which precludes its routine use.

Subcommittee on Laboratory Methods for the Examination of Air

During the year, the CCLM voted to establish a Subcommittee on Laboratory Methods for the Examination of Air. The need for such a committee to function on a broad scale extending beyond the field of any of the Sections of the Association that deal with certain phases of the subject had been pointed

out to the CCLM. As yet a chairman has not been selected, so that activities have not been planned in any detail.

In closing the report of the CCLM for 1950–1951, the members of the Committee feel that they can again point with pride to the accomplishments of the several subcommittees that are making history in a manner which adds decidedly to the laurels of the Association. The members of the CCLM extend thanks to the chairmen of these subcommittees and to the many persons associated with the subcommittees' work for their loyalty and devotion to the work, as well as for their industry and the accomplishments that have resulted from it.

FRIEND LEE MICKLE, Sc.D.
State Department of Health
Hartford, Conn., *Chairman*
REGINALD M. ATWATER, M.D.,
Secretary
ROY F. FEEMSTER, M.D.
PEARL L. KENDRICK, Sc.D.
EDMUND K. KLINE, DR.P.H.
SEWARD E. MILLER, M.D.
RALPH S. MUCKENFUSS, M.D.
GLENN G. SLOCUM, PH.D.
WALTER D. TIEDEMAN, C.E.
FRANCIS B. ELDER,
Associate Secretary

Developing a Philosophy for the Committee on Research and Standards*

THE subject assigned to me would be even more difficult were it not for the fact that the original members of the Committee on Research and Standards had the wisdom to look at their situation cautiously, rather than pell-melling into action. They were to be "responsible for carrying out research" in technical branches of public health service and training. Among the first suggestions brought to the Committee was that it should invite commercial firms to bring research problems to it—probably on a fee-for-service basis. Dr. William Park commented that if the companies wanted the truth, they would take their research to qualified laboratories; but if they brought them to the Committee, they would do so only because they wanted to buy the name of the Association for their advertising. And Dr. Frost said, "I am impressed with the futility of trying to make a research organization out of an Association of this kind."

This decision did not, however, obstruct appreciation of the role of research in the development of public health or of the fact that Sections of the Association were, and should continue to be, engaged through their own creative spirit in the investigation of problems peculiar to their interests. There were allocated to R & S by the Executive Board 29 Sectional committees and 4 committees at Association level. They represented diversified activities from 4 or more of the Sections. A major concern, therefore, was how to maintain a profitable working arrangement with Sectional activities without enforced rigidity. It was concluded that the Committee would limit its responsibility so far as Sectional committees were concerned to those researches and reports for which expenditure of funds of the Association was requested or which included statements of standards.

The enthusiasm with which the Committee's efforts were greeted is shown by the statement in the report of the Executive Board for 1931: "The performance of duties has been limited by the points of view of the membership at large—where considerable differences of attitude exist toward central review and coördination of Sectional and general committee work." Nevertheless, the Committee proceeded gently but effectively to gain contact by direct representatives to the Sectional committees, and finally offered secretarial and financial support to the Sectional activities. Twenty-two of the 34 did not reply—apparently disinterested. After several years, a restatement of policy pointed out the functions of R & S to coöperate with and coördinate activities of the Sections; to initiate investigations; to require that all reports of committees on standard methods be cleared through it, as should "anything which becomes a statement of the Association." The Committee, however, was definitely convinced of the fact that it should not maintain itself only as a reviewing agency. Moreover, it was decided that in view of the lack of responsiveness of the Sections, the Committee would give

* A talk given by Thomas Francis, Jr., M.D., at the Twentieth Anniversary Meeting of the Committee on Research and Standards of the American Public Health Association at its Seventy-ninth Annual Meeting in San Francisco, October 29, 1951.

more thought to the formation of its own subcommittees of interested and qualified investigators and concentrate upon supporting desirable studies through these channels. It also accepted the responsibility indicated originally—that of seeking financial support outside the Association for desirable studies.

One can see that at this stage a philosophy of active development was replacing that of beneficent patronage. But one is struck in reviewing the entire history of the Committee with how repeatedly its purposes and responsibilities have needed to be reaffirmed, owing in part to the changing membership and to the difficulty in obtaining a realization, within the Sections and the membership, of an over-all objective. Some of this difficulty lies in the interpretation of the word "technical." The original terms of reference limited the Committee's jurisdiction to the technical branches of public health, and to most people this would imply those things done in laboratories, bacteriological and chemical. Statistics *could* be included. I have puzzled over the intent of the word and have been unwilling to accept as technical only those activities carried out with test tubes or high-powered mathematics. Finally, in the report of the Executive Board, October 26, 1930, I located a statement to the effect that the thought of the Association was that the Committee on Research and Standards "would be responsible for the technical work of the Association lying outside of the administration of health departments." I do not know how much this clarifies the question; but at least it indicates a broad scope rather than sharp restriction.

In an extended discussion by the Committee a few years ago (March 5, 1948) the broad interpretation was considered necessary if the group were not to be restricted progressively into the circumscribed field of laboratory methods. Fortunately, the philosophy of Research and Standards, as illustrated by its activities, had evaded such restriction and had persisted in stimulating research, in bringing new problems into consideration, but at the same time giving continuous attention to problems which remained unfinished. Many of the current difficulties are the ones earlier encountered but with the increased attention to research, the great increase in the numbers of investigators and in funds for study in many fields, the opportunity for the Committee to fulfil its objectives for the promotion of research is richer. On the other hand, since many agencies, especially governmental, with great financial resources have moved into the field, the possibility exists that a thoughtful committee removed from the pressure to get something done quickly can be of great importance in examining the field and selecting those problems which are neglected or those which should be given renewed examination, or in giving a critical appraisal of research which is being done. It may be that this scholarly, statesmanlike function should be accepted by the Committee so that a session each year would be, as we sought to make it, a skull session. I commend this concept to your attention.

STANDARDS

The problem of standards was the second responsibility assigned to the Committee. There had already been notable accomplishment in the development of standards for water analysis and dairy products. They had acquired such status as to be incorporated into the legal structure. But those procedures had not received that acceptance because a group of men had used the authority of the Association to impose arbitrary standards on the field. Rather, men actively interested in the problems had conducted research, developed procedures, and estimated their reliability by scientific method and their own

technical competence. The scientific integrity which lay behind these efforts improved performance and brought rational authority and prestige to the Association.

Impressed by these successes, additional groups were joining together to propose standards not necessarily subjected to the thoughtful evaluation and critical review which had made the others so valuable. The establishment of this committee was intended as a measure to aid in the development and maintenance of standards of excellence, while closely guarding the Association against the distribution, in its name, of standards which did not meet its standards. The Committee has worked continuously to meet this situation in the field of biological laboratory methods and standards; the final establishment of the Coördinating Committee on Laboratory Methods at an Association level, and the insistence upon its purposes and prerogatives, has succeeded in obtaining recognition of inter-Sectional needs and in gaining effective inter-Sectional coördination *in that area.*

But this Association is a heterogeneous, polyglot amalgamation. The individual groups develop individual glossaries which in the atmosphere of Sectional isolation almost appear to have special meaning. It is not at all evident, either, that the standards upon which pronouncements are made and generalizations are drawn have equal status in fact or reason. Although this is an era in which the scientific method opened doors to new information with unbelievable rapidity, it is also a period when a great proportion of our decisions is governed by dogma and emotions. There is the great tendency to drive through short cuts which bypass the principles of scientific investigation to reach broad conclusions derived from inadequate or improper study and emotional urge. To return to the word "technical": that a group evades the need for proper investigation of their thesis because it is hard and expensive in no wise means that the substitute should be considered valid; if a group does not appreciate that research is needed, is it then nontechnical? No, "social" and "technical" are not antithetical. Competence in any field requires technical procedures. It is necessary that ideas be tested.

The theme, it seems to me, has developed logically, soundly, and is clearly readable. Standards should be based upon data properly obtained in the field concerned. The standards of behavior and performance in the different Sections of the Association should be viewed with the same critical care as those for laboratory methods. There should not be ready acceptance of premises because they are vague. It is my hope that with the broad interpretation of the technical fields, the Committee will be an active and continuing influence for the improvement of research and standards in all phases of public health.

The Hospitalization of Cases of Communicable Diseases*

Committee on Research and Standards

THE American Public Health Association, from its earliest beginning, has been active in dealing with the many problems of communicable diseases. American, as well as international literature is ripe with the work of its members in this field. The fields of bacteriology, epidemiology, statistics, legislation, treatment, prevention and control of infectious agents in our environment have been the areas where the Association has been most active.

Recognizing the need to reconsider current scientific information, the Committee on Research and Standards in 1948 began a study of the present practices in the hospitalization of communicable diseases. Alfred L. Burgdorf, M.D., M.P.H., a member of the Committee, was appointed Referee. His report was made at the Annual Meeting of the Association in Boston on November 10, 1948, under the title, "Hospitalization of Cases of Communicable Diseases, Together with Certain Considerations of the Isolation Techniques and Nursing Procedures Used" (*A.J.P.H.* 39, 10:1289–1294 (Oct.), 1949). The report recommended formation of a committee of representatives of national professional societies "to consider simplifying the physical requirements for isolation units so that they can become an integral part of the general hospital, and to outline in simple terms the basic requirements for isolation techniques that will be in keeping with the present knowledge of infectious disease."

On April 20, 1951, a Conference Committee on Hospitalization of Communicable Diseases, called by the Committee on Research and Standards of the American Public Health Association and financed by the National Foundation for Infantile Paralysis, met in New York City. Representatives of the following organizations participated in the Conference:

American Academy of Pediatrics
American Hospital Association
American Medical Association
American Nurses Association
American Public Health Association

Invited guest participants were present from the Canadian Hospital Council, the Joint Orthopedic Nursing Council, the National Tuberculosis Association, and the National Foundation for Infantile Paralysis.

The report of the Conference Committee, which follows, was presented to the Committee on Research and Standards of the American Public Health Association in San Francisco at its Annual Meeting on October 29, 1951. The report was accepted, and the Committee authorized Dr. Burgdorf to pursue further the idea of a manual by obtaining the recommendations of the organizations represented at the Conference.

* Summary of a Conference on Hospitalization of Cases of Communicable Diseases called by the American Public Health Association April 20, 1951.

Report of the Conference Committee on Hospitalization of Cases of Communicable Diseases

INTRODUCTION

The care of patients with communicable diseases has posed a special problem in the field of medical care for many centuries. Leprosy, recognized early in history as a contact disease, was responsible for the creation of special facilities for isolation. The concept of isolation centering about such establishments was enhanced by the destructive epidemics of plague which appeared in Europe in the 14th century and in later periods by waves of typhus, cholera, and smallpox.

When the germ theory of disease prevailed over the other tenets held until late in the 19th century, the communicable nature of certain illnesses came to be recognized. Attempts to control the disease by the erection of barriers was a natural and inevitable sequel. A dichotomy between communicable and noncommunicable diseases was in keeping with the budding age of specialization. Official health departments, as a part of the communicable disease control program, assumed in many instances financial responsibility for the construction and operation of these specialized hospitals, justifying the expenditure in the name of disease prevention.

Elaborate intramural procedures were set up to confine the disease to the affected person. Methods of treatment were developed, and doctors and nurses received special training in this field. The number of persons annually admitted to this type of service was large enough and the problems obscure enough to challenge the imagination and energies of many.

The decrease in virulence of some disease-producing organisms, the development of extensive and intensive immunization programs, the improvements of laboratory diagnostic procedures, and the development of new antibacterial and antiviral forms of therapy have thrown the isolation hospitals out of gear with the community needs.

In spite of these scientific facts, appropriate changes have not been made in community planning to provide the best medical care at reasonable cost to patients with communicable disease. This situation may be due in part to the vestiges remaining in our attitudes that a person with a communicable disease is a "loathsome" individual.

THE PROBLEM TODAY

We recognize that the isolation hospital played a very important and undoubtedly necessary role in the development of our present hospital system, as well as in our understanding and care of communicable disease. Today it is an undesirable and outmoded community facility which requires the expenditure of public and private funds out of proportion to the contribution it makes to the care of the sick or the prevention of disease. This thought has been expressed not infrequently in the literature of the past thirty years.

In 1929 both the American Hospital Association and the American Public Health Association passed a resolution recommending that the isolation hospital should be closely linked with the general hospital by being placed on the same site and under the same administrative direction.

In 1937 the Committee on Hospitals and Dispensaries of the American Academy of Pediatrics, making a study of hospitals for communicable diseases in the United States and Canada, reported that a high proportion of such hospitals had facilities and trained personnel inferior to the standards main-

tained by general hospitals. The recommendation was made that in many communities patients would be better cared for in a well organized general hospital.

For several years the National Foundation for Infantile Paralysis has advocated that cases of poliomyelitis can be safely and adequately cared for in a general hospital.

In 1948 the Committee on Research and Standards of the American Public Health Association reëxamined the broad problem of the care of hospitalized cases of communicable disease. In a published report it indicated that there was great variation in the policies of general hospitals in the United States about admitting known cases of communicable disease or of caring for those identified after admission. Furthermore, it was also evident that there was no uniformity in technics employed and that many procedures established years ago were no longer in keeping with present knowledge nor were they justified by the contribution that they might make to the prevention of disease. In further consideration of this problem the Committee proposed that the American Public Health Association meet with representatives of other official and voluntary medical, nursing, and hospital organizations to explore the possibility of making a joint statement about this problem.

The American Public Health Association called such a meeting on April 20, 1951, and the following statement represents the considered judgment of those members participating:

I. *The medical profession has a responsibility to interpret the facts about communicable disease to the related professional groups and to the public at large.*

Communicable diseases have been looked upon as a group of disease entities. With the establishment of the germ theory, it was natural that all diseases of man caused by the invasion of a parasite were considered as belonging to a special group. Common methods of control were established which applied to this whole group. It was inevitable that the laity, and to some degree, professional persons of the community thought of them as a homogenous category. Although today we recognize that communicable diseases represent a broad spectrum of diseases with great variation in communicability, treatment, economic waste, and social significance, we carry on in many instances control practices (quarantine, isolation, asepsis, antisepsis, disinfection) which are not in keeping with the established facts about a specific disease.

In his day-to-day care of communicable diseases the practising physician can do most to help reorient the public to the known facts and current sound practices. Health departments are responsible for pointing out how control of these diseases can be safely simplified and attained. The prevention and treatment of communicable diseases need not be a specialty but can be more fully integrated into the total medical care program.

II. *It is desirable and feasible for many cases of communicable diseases to be cared for at home.*

Physicians should be encouraged to care for communicable diseases at home whenever possible. In communities where hospitalization of a case of communicable disease regularly follows its diagnosis as an established and accepted procedure, this practice should be reexamined in line with the following questions:

1. Does this patient need hospital care in order to recover, or is he being hospitalized because it is done routinely in the area?
2. Are there any social reasons why the patient cannot be cared for at home?
3. Are there community resources which are not being used for home care?

4. Will hospitalization contribute to the control of the disease and prevent it from becoming "epidemic"?

III. *Communicable disease should be cared for in general hospitals.*

The purpose of hospitalizing a patient with a communicable disease is to furnish the best possible treatment available. This can best be done in a general hospital, where the over-all diagnostic and therapeutic facilities are of a high order because they are being used daily for a wide variety of other types of patients.

Consultation by any one of the medical specialists is more readily available in the larger general hospital. Many isolation hospitals are not only phychologically isolated from the rest of the medical community but, in addition are frequently so geographically removed that needed consultation is not available and is frequently dispensed with because of difficulties in obtaining it. When medical and surgical emergencies arise which may or may not be associated with the original disease, the prompt handling of such emergencies in a general hospital with specialized equipment and staffed by specially trained attendants is a matter of routine.

Many general hospitals are routinely accepting and caring for communicable disease, generally through their pediatric services, and are competent to do so. Other hospitals with comparable staffs and facilities could do the same without further ado if archaic hospital by-laws, outdated medical attitudes, or an uninformed laity did not prevent it. A few hospitals might need assistance and guidance from state and local health departments or professional organizations. The care of communicable diseases in general hospitals as a regular service appears not only desirable but inevitable.

IV. *There is need to make clinical material more extensively available.*

When the care of communicable diseases was considered a specialty, only a small percentage of nurses and doctors had an opportunity of developing any experience with this group of diseases. This was generally accomplished by affiliations of one kind or another. As the amount of clinical material in isolation hospitals decreased, a smaller and smaller proportion of nurses and interns were thus afforded this experience. By hospitalizing cases of communicable disease in a general hospital, this small amount of clinical material can then be made available for the preparation of a larger group of professional personnel in training.

V. *All medical personnel should have basic training and experience in the care of communicable diseases.*

The technics of asepsis used in the care of patients with communicable disease are logical elaborations of basic antiseptic procedures upon which good medical and surgical care is founded.

By sound training of all hospital personnel in the principles and conscientious pursuit of such basic procedures, not only can a reduction in unexplained cross-infections on general wards be expected, but also the problem of providing communicable disease care can be greatly simplified.

The failure to include adequate preparation in communicable diseases in many medical schools and schools of nursing has had the inevitable result that a large portion of physicians and nurses have felt themselves inadequate to care for patients with communicable disease.

If all physicians and nurses were well prepared, tested for susceptibility, immunized against communicable diseases whenever possible, well oriented in the field, and had adequate supervision, then much of the fear and needless mystery would disappear and all physicians and

nurses would be prepared to cope with communicable diseases when and wherever they appear.

VI. *There is a need for the promulgation of general and minimum standards in the care of communicable diseases in general hospitals and in the home.*

A manual for the care of communicable diseases in general hospitals should be prepared and made available as a guide for communities. It is further realized that many hospital communities have, and many others could work out, their own programs with the staffs already available. It is recommended that the American Public Health Association prepare such a manual after consultation with and the participation of other agencies active in this general field.

ALFRED L. BURGDORF, M.D., M.P.H.
Director of Health,
Hartford, Conn., *Chairman*
HAROLD ABRAMSON, M.D.
ROBERT ALBRECHT, M.D.
KATHERINE G. AMBERSON, R.N.
AGNES E. M. ANDERSON, R.N.
WILLIAM L. BRADFORD, M.D.
L. O. BRADLEY, M.D.
GLIDDEN L. BROOKS, M.D.
JAMES P. DIXON, JR., M.D.
ELIZABETH A. EDWARDS, R.N.
FLOYD M. FELDMANN, M.D.
CLIFFORD G. GRULEE, JR., M.D.
IRVING F. KLEIN, M.D.
KENNETH S. LANDAUER, M.D.
JOHN F. LANDON, M.D.
F. F. SCHWENTKER, M.D.
LOUISE SUCHOMEL, R.N.
FRANK W. VAN DYKE
HELEN M. WALLACE, M.D., M.P.H.

Subcommittee on Morbidity Registration and Statistics*

Committee on Research and Standards

DURING the past year, the Subcommittee has attempted to clarify its functions in relation to the development of morbidity statistics.

At the last meeting of the parent committee there was considerable discussion of the need for a comprehensive study on morbidity statistics as related to the characteristics of a specific population group. The Subcommittee considered the possibility of undertaking such a study but felt that it would be unwise for a group of its nature to engage in such research for the following reasons:

1. Such a study is a full-time undertaking and requires a sizable staff for its successful prosecution. It is unlikely that any of the members of the Subcommittee would have the necessary time to devote to such an operation.
2. If the Subcommittee were to act as an operating unit, it would be difficult for it to exercise an advisory and consultant function in an objective way. The Subcommittee feels, rather, that it might act as a catalyst, helping to get studies started and pointing out the directions in which research is desirable.
3. There are, at the present time, several groups which are engaged in active research on morbidity in population groups.

In considering directions in which the Subcommittee might take constructive action, it was felt that recognition should be taken of the fact that the Committee is within the framework of the American Public Health Association. The Subcommittee felt, therefore, that it should consider the questions concerning morbidity statistics which face administrators of organized public health programs. There is badly needed at the present time an outline of the kinds of morbidity statistics required by such administrators and a statement of the conditions under which it is desirable to collect various types of morbidity statistics at the local, state, and national levels. An official statement from the Association concerning the areas in which such studies are needed and indicating the general requirements of such studies would probably do a great deal to help administrators obtain funds. The development of such a statement should encourage administrators to study their own problems and should be aimed at broadening the base of research. If this were done, the Subcommittee would then be in a position to serve as a clearing house for studies, rendering an advisory and consultant service upon request and indicating areas where further work is desirable.

The Subcommittee expects to devote the coming year to the development of such a statement as indicated above.

PAUL M. DENSEN, D.Sc.
University of Pittsburgh
School of Public Health
Pittsburgh, Pa., *Chairman*
GAYLORD W. ANDERSON, M.D.
ROBERT F. KORNS, M.D.
MORTON L. LEVIN, M.D.
FELIX E. MOORE, JR., PH.D.
ROBERT E. SERFLING, PH.D.

* Report of the Subcommittee to the Committee on Research and Standards.

Some Legal Aspects of Air Pollution Control*

Engineering Section

THERE are two general legal approaches to air pollution control: public or private nuisance, and specific legislation. In the absence of specific legislation, control of a specific source of pollution can be effected in practically every jurisdiction in the United States by proving to the satisfaction of the court that it creates either a public or a private nuisance. Air pollution *per se* is not considered a common law nuisance unless it is proved to interfere materially with the enjoyment of life and property. The plaintiff, whether a private citizen or a public body, has the burden of proof both that the nuisance exists and that it is caused by the specific source sought to be abated. In a built-up city or industrial area it is much more difficult to prove the latter than the former, since a reasonable defense is an admission of the existence of the nuisance but a denial that the defendant is its source.

Certain identification of a sole or predominant source is possible where the stack discharge contains a chemically or physically unique material not discharged in significant quantity elsewhere in the area. Of course, even this fact must be proved in court. In a rural or nonindustrial area this may be easy to prove. However, in a built-up area, courts may not be willing to accept expert testimony to the effect that in all probability none of the other stacks in the area emit significant quantities of the unique material if the expert has not personally checked all these other stacks. To prove a nuisance, it is *not* necessary to prove actual injury to health or serious physical damage to property, provided a case is made out for interference with the enjoyment of life and property. "The inconvenience must be something more than mere fancy, mere delicacy or fastidiousness; it must be an inconvenience materially interfering with the ordinary comfort, physically, of human existence, not merely according to elegant and dainty modes and habits of living, but according to plain, sober and simple notions."[1]

In some instances, courts have ruled that the issuance of a charter to a railroad "to operate its line includes the right to make such noise, smoke and smells as are reasonably unavoidable in the careful and proper conduct of its business, even if some injury to health or some damage to property be caused thereby."[2] This same doctrine does not apply to ordinary business enterprises.

It is interesting to note that in some private nuisance cases where damages were awarded, injunctive relief has been denied, i.e., the nuisance has been allowed to continue. In others, injunctions have been issued requiring the offender to abate the nuisance. In several private nuisance cases, courts have ruled that the use of the best known preventive measures is an adequate defense. However, in a series of public nuisance actions they have taken the

* Report of the Committee.
COMMITTEE ON AIR HYGIENE.
Organized 1946. Published Reports: *A.J.P.H.* June, 1948. *Year Books*, 1948–1949, 1950–1951.

contrary position that "wherever such a business becomes a nuisance, it must give way to the rights of the public, and the owners thereof must either devise some means to avoid the nuisance or must remove or cease the business."[3]

The right of a private citizen to bring a nuisance action into court is restricted only by his ability to finance it. This factor can, of course, be a real deterrent to bringing action. However, the right of a health department or other specific governmental agency to do so may be subject to the enabling acts setting up the agency and granting it powers. If its sphere of action is limited by statute or legislative intent to jurisdiction only over matters relating to public health, it may not have the authority to initiate a nuisance action in which specific injury to health may not be provable. This would seriously limit the department's ability to operate in the air pollution field. Fortunately, very few health departments are subject to a restriction of this nature, provided it can be shown that the nuisance affects a number of persons rather than just a few.

A nuisance action may be the ideal method for a group of ranchers to abate the nuisance from a smelter that may have the only stacks for miles around. However, such actions cannot be used for effective abatement of air pollution in an urban industrial area. Of course, even in a large city, one man's stack may terminate a few feet from another's window, so that any competent witness can testify to seeing the discharge travel directly from the stack to the window. Nuisance actions still are available to offer the injured party relief should all other remedies fail him.

The most simple type of specific air pollution legislation is a state law declaring smoke and/or other forms of air pollution to be public nuisances *per se*. Municipalities can similarly declare to be a nuisance something not previously recognized at common law, provided such action is sanctioned by a state's legislation or its constitution and is neither unreasonable nor oppressive. Where such laws are silent as to quantity, duration and type of pollution, it is still necessary in a nuisance action in court to prove that the quantity, duration and type were sufficient, in fact, to cause a nuisance. However, on the strength of such a declaration in state constitution or law, a municipality, empowered to adopt such laws, may amplify the definition by a reasonable statement of the quantity, duration and type of pollution which will be considered a nuisance within its own jurisdiction. Courts have ruled some municipal smoke control ordinances void where they attempted to define smoke a nuisance *per se* in the absence of an enabling provision in the state's constitution or law.

It is not necessary for a state constitution or law to approach the problem of air pollution control by explicitly calling it a public nuisance. It can take the more direct approach of adopting legislation under its police powers which permit the state to enact laws that forbid and regulate various practices in order to provide for the general welfare and comfort of the people, regardless of whether or not they constitute nuisances. Where there is nothing in the state constitution or law or in its charter to prevent it, a municipality may act under its police powers in similar manner. Although a legislative body cannot declare to be a nuisance that which is not in fact a nuisance, it does not have to take cognizance of whether or not air pollution is a nuisance in applying its police powers to such abatement. Despite the fact that the right of a governmental agency to use police powers for air pollution control has been recognized by the courts, they are not bound to recognize an unreasonable use of such powers, e.g., "legislation, either local or general, which, when enacted under the pretext that it represents the exercise of the

police power, is shown to be oppressive, thus imposing unnecessary and unreasonably burdensome conditions and restrictions upon and against that class upon which it is designed to directly operate, will not be sustained." [4]

There is, however, no necessity for so drafting an ordinance that it imposes unreasonably burdensome conditions and restrictions. Reasonableness must be considered as meaning that the conditions and restrictions of the law take the most direct route to curb air pollution. Direct routes include limitations on permissible emission from stacks; prohibition of new construction (and alterations of existing construction) when they include shortcomings of design proved in the past to result in emission from stacks in excess of the above limitations; and inspection of existing installations to look for these same shortcomings of design. The cloak of reasonableness in the exercise of police power has, in some municipalities, been extended to cover restrictions on the sale of fuel and fuel-burning equipment; licensing of fuel and fuel-burning equipment dealers, compulsory reporting of fuel and fuel-burning equipment sales; and by means of zoning control to restrict industries likely to cause air pollution to certain areas.

It is of interest to note that in one case,[5] the court held an ordinance invalid because it stipulated an impossible condition, i.e., combustion without any emission of *gas*. However, in another case it was held that omission from the ordinance of any regulations concerning the discharge of noxious gases does not invalidate a smoke ordinance, since "legislation designed to prevent one evil is not void because it does not prevent another." [6]

Much current interest attaches to the legislation necessary to empower counties or groups of adjacent counties to organize as air pollution control districts. Where the county regulations are intended to apply only to those parts of the county not in cities or incorporated villages, no special legislative problem exists. However, where it is desired to merge municipal and county enforcement, special state legislation may be necessary. The California pattern allows a county to supersede municipal enforcement by option in order to come under the coverage of a state law which sets up county-wide air pollution control districts. However, until such time as the county exercises its option to be covered by the law, it and its cities continue the air pollution control measures previously in effect.

There are a few states where the creation of state agencies is now being considered, either to control smoke and air pollution or to aid local or regional air pollution control bodies. Among these states are California, Illinois, Maryland, Minnesota, New Jersey, New York, Oregon, and Utah.

There has been a strong recent trend to write air pollution ordinances as acts empowering the administrative agency to adopt its own rules and regulations. In the New York City ordinance (February, 1949) this included standards for emission. An outline of the sections of this latter ordinance will indicate how simple a law may be:

Section A. Setting up a Bureau of Smoke Control in the City Department of Housing and Buildings.

B. Declaration of Legislative Policy.

1. A declaration that pollution is "a menace to the welfare and comfort of the people of the city and a cause of extensive damage to property."
2. A declaration that it is the "policy of the city to establish and maintain active and continuing supervision of . . . emission . . . into the atmosphere."
3. A statement: "The necessity for legislative intervention by the enactment of the provisions of this local law is hereby declared as a matter of

legislative determination, and this title (i.e. ordinance) shall be liberally construed so as to effectuate the above purposes."

Section C. Definitions.
D. Setting up the Smoke Control Board.
E. Setting up the office of Director of Smoke Control and defining his duties. (His qualifications may also be set forth, i.e., engineering training, experience in public health and air poilution control.)
F. Setting forth the duty of the Board to adopt rules and regulations "regulating and controlling emission . . . into the open air," the right to adopt rules requiring that "plans and specifications of . . . equipment be submitted to the Director for approval prior to its installation, construction or alteration," and the right to charge fees.
G. The requirement of public hearing before the adoption of rules and regulations or amendments thereof.
H. The requirement that no new installations or alterations be made without applications and permits as specified.
I. The right of the Board to order the Director to seal equipment responsible for emissions.
J. An appeal procedure.
K. A separability clause holding the remainder of the law valid should some sections be held invalid.
L. A repealer of previous ordinance provisions.

Administrators tend to stress the extent to which improvements can be made by educating the public and by voluntary public coöperation. They measure public education in terms of the number of speeches delivered, pamphlets distributed, lines of newspaper space obtained, hours of radio time obtained, meetings organized, etc. What they forget is that the primary accomplishment of all this activity is to keep the public aware of the existence of the law. If the law itself is weak, air pollution producers can and will continue to take advantage of its shortcomings. It is therefore important that the law be made strong, in both its coverage and its penalties, even when it is contemplated that the maximum use of conciliatory and educational measures will be applied to its enforcement. The foregoing should not be construed as minimizing the value of public educational measures. They are of real value in explaining to the public the nature, causes and extent of air pollution, the methods of preventing it, and the need for public support.

H. A. WHITTAKER,
Division of
Medical Services,
National Research
Council, Washington, D. C., *Chairman*
JOHN BUXELL
GORDON M. FAIR
SOL PINCUS
ARTHUR C. STERN
H. WEXLER, D.Sc.

Advisers:
Epidemiology Section
HOLLIS S. INGRAHAM, M.D.
Industrial Hygiene Section
C. P. YAGLOU
Laboratory Section
STUART MUDD, M.D.

ACKNOWLEDGMENT—Full credit for the preparation of this report belongs to Arthur C. Stern of this Committee, who prepared the original text, which has been reviewed and approved by the Committee.

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Bathing Places*

Engineering Section

THE latest (1948) report of this committee was published by the American Public Health Association in 1949. This published report was a complete revision of the earlier reports by the Committee. The sections of the previous reports having to do with outdoor bathing places were largely rewritten. Subsequent to the publication of this printed report, the Committee in 1949 issued a report in mimeographed form having to do with rating schedules for swimming pools. This report presented several types of rating schedules in use.

Several matters have come to the attention of the Committee and have been discussed by the Committee membership. These are listed below.

POSSIBLE SHORTAGE OF CHLORINE FOR SWIMMING POOL DISINFECTION

The addition of chlorine or chlorine compounds is the method principally used for swimming pool disinfection. The early part of this year the National Production Authority issued an order known as NPA Order M-31 dealing with the production and distribution of chlorine. This order was intended, apparently, to provide a dependable supply of chlorine for use in disinfection of water supplies and sewage. In the order, the term "public health chlorine" is defined to mean "chlorine which is essential for purification of water for human consumption and use (exclusive of chlorine used for swimming pools) or for treatment of sewage, in order to protect the public health, welfare and safety." It has been disturbing to public health officials and those interested in recreation to note the failure of the order to provide for supplies of chlorine used for swimming pools. Another point of interest with regard to the order is that "chlorine" is defined to mean "the element chlorine whether in gaseous or liquid form." Chlorine for swimming pool disinfection may come in gaseous or liquid form in cylinders, or it may be in the form of a chlorine powder, such as sodium and calcium hypochlorites, or in some cases a solution of water and chlorine may be supplied to swimming pool managements by chemical supply houses. Even if the order were changed to include swimming pools without any change in the definition of "chlorine," there would be no definite control over chlorine powders or chlorine solutions from the standpoint of definitely providing an adequate supply of such powders or solutions.

The Conference of State Sanitary Engineers adopted a resolution at its May, 1951, meeting that the National Production Authority be requested to modify its Order M-31, to provide special assistance for the provision of chlorine for swimming pools. Subsequently the director of the Chemical Division, NPA, replied to this request, stating in part as follows:

> Although Order M-31 does not recognize swimming pools as justification for priority assistance, the use of chlorine for this purpose is not limited, and operators should contact their normal suppliers.
>
> There is a substantial expansion of chlorine under way, which we hope will ultimately, if

* Progress Report.
COMMITTEE ON BATHING PLACES (Joint with the Conference of State Sanitary Engineers).

not immediately, relieve any local shortages. Your coöperation in following our suggestion regarding regular sources of supply will be greatly appreciated.

To date, no reported cases of serious trouble in obtaining chlorine or chlorine compounds for swimming pool disinfection have reached this committee.

SWIMMING POOL CHLORINATION

From information received by the Committee, faulty swimming pool design sometimes results in extremely high concentrations of chlorine residuals at one or more swimming pool inlets. The following addition is suggested to draw attention to this fact, the italicized words in the text constituting an addition to the present wording:

Section 7. Inlets and Outlets. Change paragraph D to read as follows:

D. Inlets for fresh or repurified water should be located to produce so far as possible uniform circulation of water and the maintenance of a uniform chlorine residual throughout the entire pool without existence of dead spots. *Design should be such as to avoid the need for operating with extremely high concentrations of chlorine at one or more points in the pool to introduce the necessary amount of chemical.* In semi-artificial pools of irregular shape a careful study should be made of probable circulation currents, and inlets should be located and spaced to provide as complete circulation as possible. Inlets from the circulation system should be submerged to reduce escape of chlorine odors. Where water from the public water system is added to the pool, cross-connections between the public water system and the swimming pool water should be eliminated by pumping make-up water from a pump suction well or admitting water to the pool above the overflow elevation of the pool. It is recognized that the avoidance of cross-connections in this manner may require the installation of a separate heater on the line supplying make-up water—particularly where large amounts of make-up water are added.

In the published report of this committee it is recommended that the amount of available or excess chlorine in swimming pool water at all times when the pool is in use shall not be less than 0.4 p.p.m. or more than 0.6 p.p.m. It is further stated that "whenever chlorine or chlorine compounds are used with ammonia, effective results have been reported where the amount of available or excess chloramine is between 0.7 and 1.0 p.p.m., but recent reports suggest the desirability of operating with higher chloramine residuals such as 2.0 p.p.m." In an interesting discussion on the subject,* Mood favors interpreting the recommendation that a chlorine residual of 0.4 to 0.6 p.p.m. be maintained to mean free available residual chlorine rather than chlorine in any combined form. Mood's work did show that free available chlorine is a much more rapid disinfectant, as we all know, and undoubtedly safer conditions are secured by having that amount of free available chlorine as a minimum in the pools, even though bacteriological analysis reports may be pretty good without as high a content as that. There has been some reluctance on the part of the Committee to make the specific statement recommended by Mood because of the fact that some pools appear to have gone along fairly satisfactorily without having maintained such high free available chlorine residuals. Abroad, much higher chlorine residuals than are usually maintained in this country apparently have been successfully used for swimming pool disinfection.

The following wording is suggested to bring emphasis to the desirability of maintaining free available chlorine residuals, the italicized words in the text constituting additions to the present wording:

Section 24. Chemical and Physical Quality of Swimming Pool Water. Change paragraph A of this section to read as follows:

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* Mood, Eric V. Effect of Free and Combined Available Residual Chlorine upon Bacteria in Swimming Pools. *A.J.P.H.* 40, 4:459–466 (Apr.), 1950.

A. Excess Chlorine—Whenever chlorine, calcium hypochlorite, or other chlorine compounds, without the use of ammonia, are used for swimming pool disinfection, the amount of available or excess chlorine in the water at all times when the pool is in use shall not be less than 0.4 p.p.m. or more than 0.6 p.p.m. *Available data indicate that for most effective results this should be present as free available residual chlorine.* Whenever chlorine or chlorine compounds are used with ammonia, effective results have been reported where the amount of available or excess chloramine is between 0.7 and 1.0 p.p.m., but recent reports suggest the desirability of operating with higher chloramine residuals such as 2.0 p.p.m. *and there is a trend away from chlorine and ammonia disinfection in properly designed pools, inasmuch as less reliable disinfection is accomplished.* Attention is directed to the possibility of interference by nitrites with the orthotolidine test, particularly when chlorine-ammonia disinfection is employed. If readings are made on the water to be tested within 5 to 10 minutes after the orthotolidine is added, and samples are kept away from the light during this period, the nitrite interference will be decidedly lessened. Standards for determining chlorine residuals shall be prepared and used according to the recommendations in *Standard Methods for the Examination of Water and Sewage* of the American Public Health Association. Standardized color discs and comparators may be used.

ELECTRICAL SAFETY CODE

The Pennsylvania Department of Health has had under consideration some proposed electrical safety requirements for public bathing places and has kindly furnished the Committee a copy of them. No official action has yet been taken by the Pennsylvania Department of Health in adopting these proposed requirements. The Committee has reviewed this proposed code and believes that it furnishes a good basis for a general code. It is suggested that the following new section be added to the Committee report:

Section 39. Electrical Safety Code

There has been interest in the development of electrical safety requirements for all public bathing places. The Committee presents as an appendix to its report a suggested type of electrical safety code which is based largely on a recommended code being considered following investigations by the Pennsylvania Department of Health.

SAFETY PRECAUTIONS

The Committee has had the advice of Carroll L. Bryant, Director of Water Safety Service of the American Red Cross, with regard to possible revisions of certain sections of our report dealing with safety precautions. The suggestions have been reviewed by the Committee and the following revisions are recommended:

Section 20. Safety Precautions at Swimming Pools. Change to read as follows:

A. In general, construction, appliances and operation shall be such as to reduce to a practical minimum in swimming pools the danger of drowning and of injuries to bathers from falls or collisions. Various detailed suggestions to this end appear in this report.

B. Every swimming pool having a minimum horizontal dimension of less than 75 feet should be equipped for safety and rescue with:

1. One or more light but strong poles (bamboo or other) with blunted ends not less than 12 feet in length, for making reaching assists or rescues.
2. One or more throwing ring buoys not more than 15 inches in diameter having 60 feet of 3/16 inch manila line attached, placed on racks at strategic points adjacent to the pool.

C. Every swimming pool having a horizontal dimension of more than 100 feet should, in addition to the foregoing, be equipped with one or more fully equipped light and handy (10–12 foot length) lifeboats, for patrol and rescue purposes.

D. Every swimming pool should be equipped with a standard 24 unit first aid kit which should be kept filled and readily accessible for emergency use.

E. Every swimming pool should have a readily accessible room or area designated and equipped for emergency care of casualties. Minimum equipment for the emergency room should be the first aid kit previously suggested, and a stretcher and two woolen blankets, for emergency use only.

F. Every swimming pool should provide, immediately adjacent to its telephone, a se-

lected list of telephone numbers for (1) nearest available doctors, (2) nearest available ambulance service, (3) nearest available hospital or hospitals, and (4) nearest available police or fire department rescue squads.

Section 22. Supervision of Bathers. Change paragraph C of this section to read as follows:

C. Swimming pool lifeguards and supervisors should be properly trained and qualified lifesavers, competent in aid and rescue methods and technics, and in the use of artificial respiration and other resuscitative measures.

Enough members of the pool staff should be trained and certified in first aid to insure that at least one person competent to care for injuries is on duty at all times when the swimming pool is in use.

Section 38. Safety Precautions at Outdoor Bathing Places. Change paragraphs B and C of this section to read as follows:

B. At every bathing beach there should be provided a sufficient number of life rings 15 inches in diameter with 75 feet of 3/16 inch manila line attached to each. Ring buoys when not in use shall be hung on racks equipped with 3 or 4 pins placed some 10 inches apart in a triangle or diamond formation on which rope can be coiled without kinking. It is recommended that one or more rescue devices known as swimming rescue buoys (diamond or torpedo type), equipped with 100 to 300 feet (or longer if necessary) of trail line (⅛ inch specially prepared stout cotton) be placed ready for use on each life guard stand.

C. At every bathing beach there should be provided at least one square-sterned boat equipped with oars, oar locks, and a life ring as described in the foregoing, ready for use. Lifeboats, as indicated, should patrol the outer fringe of standing bathers, one boat to every 200 yards of beach used for bathing purposes. Boats should not be permitted in the swimming area except when stationed there for emergencies. At all large bathing beaches, especially large beaches along salt water, it is desirable that there be provided a surf boat not less than 16 feet long, on each side of which there shall be hanging ropes arranged so that persons in the water can easily catch hold of same and be supported thereby. Such boats should be equipped with two or more sets of oars and two sets of oar locks and at least two life buoys or life preservers with ¼ inch manila lines not less than 100 feet in length with suitable reels attached thereto.

Bathing beaches should be equipped with one or more paddle boards (hollow-type surfboards) to be used as rescue devices. They should be kept in readiness at strategic points along the beach.

Every bathing beach, other than surf, may well be equipped with one or more sets of grappling irons held ready for use in a locker immediately adjacent to the bathing area, but not in view of the public. Where the water is clear, one or more waterscopes may be held in readiness for use with the grappling irons.

Add a new section as follows:

G. In some localities where bathing areas are in rough water, such as some surf locations, special precautions and equipment may be needed in addition to those outlined in this section.

CONTROL METHODS FOR SWIMMER'S ITCH

In the published report of the Committee, reference is made in the introduction to the occurrence of schistosome dermatitis, or "swimmer's itch," which has affected bathers in the waters of lakes, rivers and ponds, or in beach pools which support snails. Experience in Wisconsin indicated that swimmer's itch could be adequately controlled by application of 2 pounds of copper carbonate, uniformly distributed per 1,000 square feet of area, in lakes where the alkalinity was 75 p.p.m. or less, and by application of 1 pound of copper carbonate and 1 pound of copper sulfate for corresponding areas of lakes having an alkalinity greater than 75 p.p.m. In some cases the chemical solution was siphoned out from a container transported on a boat, and in some cases the chemical solution was pumped over the area. It has been found there that adequate control is obtained for one season by carrying out the treatment off shore to the 4 or 5 foot depth level and by treating upwind 100 to 200 feet from the bathing beach as well as the beach itself. Frequently protection is afforded for a two year period by one treatment.

DISINFECTION OF BATHING SUITS

One of the manufacturers of bathing suits pointed out that knitted suits will

be damaged by boiling water and thought that the Committee should recommend the use of some type of chemical disinfectant. In Section 21-D there is the following wording: "All such suits and towels should be washed with soap and boiling water, rinsed and thoroughly dried each time they are used. Some suits are made of materials that may be damaged by boiling water; disinfectants for this type of suit should not be relied on unless under adequate control." In one state there has been a definite approval issued for a method of chemical disinfection involving the use of one chemical that is reported to be sold under several trade names. However, the committee is reluctant to recommend any one type of disinfectant in its report because of the lack of authentic information as to the use of various types of disinfectants. It is believed preferable to leave the control to the states and to allow the wording of the report, as here quoted, to remain as it is.

STUDIES OF BATHING WATER BY U. S. PUBLIC HEALTH SERVICE

The Environmental Health Center made a study of bathing water quality and its relation to the health of bathers in Westchester County, N. Y., during the summer of 1950. It was the third study of this type that has been made by the Center. The objective of these studies is to determine, if possible, any relation that may exist between the quality of the water, as determined by the density of coliforms and enterococcus organisms, and the health of people who have used the water for bathing.

In Westchester County, two bathing areas were selected for the study, the municipal beaches at New Rochelle and Mamaroneck. The waters at these beaches were sampled three times daily from June 19 to August 25. Data concerning illness and swimming experience during the same period were obtained from approximately 6,000 individuals living in the areas adjacent to each beach. The epidemiological data have been forwarded to the National Office of Vital Statistics for coding, tabulation, and statistical analysis, but to date the results have not been received.

A previous study was made in Chicago in 1948. The results of the Chicago study revealed no noticeable correlation between coliform densities and illness among bathers when considering the average water quality at each of two beaches during the survey. It was noted that the reported prevalence of illness was generally higher among persons who did a moderate amount of swimming than among nonswimmers. This apparently confirms observations in other localities. It should be noted that the quality of water during this study (median coliform densities of 43 and 240 per 100 ml. respectively for the two beaches) was better than that of water generally considered in many areas to be acceptable for bathing; but inasmuch as in some localities stricter standards are in existence, it is of interest that the conclusion was reached that bathing in natural fresh water of the quality indicated in this study presented no apparent general hazard to public health.

In a study in Dayton and Bellevue, Kentucky, in 1949, epidemiological data were obtained for persons swimming in the Ohio River and persons swimming in a large outdoor pool equipped with a filtered and chlorinated recirculating water supply. Bacteriological samples of the water on the river beach and in the pool were collected daily for the period of the survey. The median coliform most probable number for the river water was 2,300 per 100 ml., and for the pool water was less than 3.0 per 100 ml. The results obtained indicated that in general the incidence of illness increased with the frequency of swimming. Comparison of illness incidence for swimmers at the two locations showed that the group that did most of

its swimming in the pool, as compared with the group swimming in the river, apparently had a greater amount of illness, but these illnesses were mainly of the eye, ear, nose and throat. This might possibly be attributed to effects from diving or from chemical additions; or it might be theorized that contact infection between bathers might be greater in the pool than in the river.

SUMMARY OF PROPOSED CHANGES IN PRINTED REPORT

1. It is recommended that the introduction of the printed report be slightly changed as commented on.

2. It is recommended that Section 24 regarding chlorination be somewhat modified in favor of higher chlorine residuals; and that a slight modification be made in Section 7 concerning distribution of chlorine through swimming pools.

3. It is recommended that a proposed electrical safety code be published as an appendix to the printed report, with a reference to this in the text.

4. It is recommended that Sections 20, 22, and 38 of the printed report be modified to the extent recommended by the director of Water Safety Service of the American Red Cross.

SUGGESTIONS AS TO COMMITTEE REPORT

The Committee members would welcome any suggestions either on the matters discussed in this progress report or on any other phases of bathing place sanitation.

Appendix

PROPOSED ELECTRICAL SAFETY REQUIREMENTS FOR PUBLIC BATHING PLACES *

A. *Electrical Safety Requirements for All Public Bathing Places*

1. The entire electrical installation provided for public bathing places, their dressing and locker rooms, and other indoor and outdoor locations shall comply with and be maintained in accordance with requirements of the National Electrical Code.

2. All electrical wiring accessible to bathers (if run exposed) shall be in rigid conduit or electrical metallic tubing; and all boxes, fittings and accessories used in damp or wet locations shall be so installed and equipped as to prevent the entrance of water. (See Article 346, Section 3464, and Article 348, Section 3484—National Electrical Code.)

3. Distribution centers, where fused switches or circuit breakers are grouped, shall be enclosed and located so as to be inaccessible to other than authorized persons.

4. In addition to the grounding requirements for electrical equipment and circuits as required by the National Electrical Code, all water and other piping to and from the public bathing place, including inlet and outlet pipes, shall be metallically bonded together and adequately connected to the same grounding electrode used to ground the neutral conductor of the electrical system. (See Article 250, Section 2554—National Electrical Code.)

5. Pumps, filters, and other mechanical and electrical equipment shall be enclosed in such manner as to be accessible only to authorized persons and not to bathers. Construction and drainage shall be such as to avoid the entrance and accumulation of water in the vicinity of the electrical equipment.

B. *Additional Electrical Safety Requirements for Outdoor Public Bathing Places*

1. The crossing of outdoor public bathing places by open overhead electrical conductors is prohibited.

2. Overhead electrical conductors crossing playgrounds contiguous to outdoor public bathing places shall comply with the requirements of the National Electrical Safety Code, Part 2.

3. All metal fences or railings on which a broken electrical conductor might fall shall be effectively grounded. For this purpose

* This appendix is practically a copy of a proposed code prepared by the Bureau of Sanitary Engineering of the Pennsylvania State Department of Health, with two or three very minor changes as to inspection agency, etc.

driven ground rods shall be placed at two locations close to and on either side of each crossing. For parallel exposure exceeding 300 feet, additional grounds shall be provided at the midpoint, or at intervals not to exceed 300 feet.

C. *Annual Electrical Safety Inspection*

1. The electrical installation of every public bathing place should be inspected and approved annually by a reputable inspection agency for compliance with the foregoing requirements, and any violations reported shall be corrected promptly.

2. Any new or modified electrical installation of a public bathing place shall be inspected and, if necessary, corrected before it is placed in service, as provided in the preceding paragraph.

3. A record of each inspection and the recommendations made by the inspection agency shall be kept on file by the management for a period of at least two years.

JOINT COMMITTEE ON BATHING PLACES

WARREN J. SCOTT, State Department of Health, Hartford, Conn., *Chairman*

American Public Health Association
ROBERT N. CLARK
ALFRED H. FLETCHER
LOUIS F. WARRICK

Conference of State Sanitary Engineers
DAVID B. LEE
RICHARD MESSER
EDWARD A. REINKE

Advisers:
Laboratory Section
WALTER L. MALLMANN, PH.D.
Epidemiology Section
RALPH E. WHEELER, M.D.

Expenditures for Research in Environmental Health*

Engineering Section

SCOPE OF THIS REPORT

ENVIRONMENTAL health may be defined as that body of human knowledge and effort which concerns itself with the control of man's physical surroundings in order to prevent illness, advance his physical and mental well-being, and prolong his life. This definition embraces all of the content of the 1943 statement of the National Research Council (reproduced as an addendum to this report) and also aspects beyond the field of engineering. The breadth of this concept of environmental problems is embodied in the new book (issued in October, 1951) entitled *Environment and Health*, prepared by the U. S. Public Health Service.[1]

This committee report is aimed at a presentation of expenditures for research in environmental health. The research with which it is concerned is the study of fundamental principles and processes, and hence does not include either developmental work or investigations directed at evaluating existing methods and equipment.

A previous report by this committee (the membership was different) was presented at the 1947 Annual Meeting of the A.P.H.A.[2]

INTRODUCTION

The rapid expansion of all kinds of research activities in the United States since the beginning of World War II has been marked by a vigorous acceleration of research in the medical and allied sciences. This is shown by Table 1, which follows.

In only four years, from 1947 to 1951, expenditures for medical and allied research (hereafter called "health research") have increased from $111.0 million to $181.2 million, or more than 63 per cent. We are well on our way to the goal recommended by the President's Scientific Research Board in 1947—$300 million by 1957.[3]

RATE OF EXPANSION IN ENVIRONMENTAL HEALTH RESEARCH

In the environmental health field, however, research has not expanded at a rate comparable either with all research or with total health research. Complete data are by no means available, but there are some indications:

1. In 1948 † the U. S. Public Health Service made research grants (exclusive of water pollution control grants) totaling $9,871,351; and

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* Progress Report.
Committee on Exploration of Research Needs in the Field of Environmental Sanitation.
Organized 1946.

Note—The majority of the Committee believes that the term "environmental health" connotes a considerably broader area than the term "sanitary engineering" does or can connote (see the last paragraph herein under the heading "Other indications of resources for environmental health research.") Two Committee members, however, Professors Chanlett and Gotaas, strongly urge continuance of the term "sanitary engineering," outrightly and intensively giving to these words a much broader interpretation than they have heretofore been given. The Committee believes that "sanitary engineer" indicates an occupational specialty whose identity should be preserved as representing that body of highly qualified engineers working in the field of environmental health.

† 1947 was the initial year of the program of research grants. Little was done in environmental health at first, so the year 1948 is taken here for comparison with the most recent year.

TABLE 1

Expenditures for Health Research, 1951 and 1947
(Millions of dollars)

		1951 [1]	*1947* [2]
Grand Total		181.2	111.0
Government		76.2	33.0
Public Health Service	35.2		
Atomic Energy Commission	18.0		
Department of Defense			
Army	6.8		
Navy	6.0		
Air Force	4.7		
Veterans Administration	4.5		
Other (e.g., Children's Bureau)	1.0		
Industry		60.0	47.0
Pharmaceutical and proprietary	52.5		
Industrial foundations	5.0		
Other	2.5		
Philanthropy		25.0	25.0
Philanthropic foundations	10.0		
Voluntary health associations	10.0		
Personal donations	5.0		
Hospitals, medical schools		20.0	6.0
Hospitals	15.0		
Medical schools	5.0		

[1] Schifferes, Justus J. Who Pays for Medical Research? *Medical Economics* 28, 10: 64 ff., 66 (July), 1951.
[2] *The Nation's Medical Research.* Vol. 5 of *Science and Public Policy.* Report to the President by John R. Steelman. (President's Scientific Research Board, October, 1947), as revised slightly by the Research Planning Branch of the U. S. Public Health Service. Washington: Gov. Ptg. Office, 1947, p. 113.

TABLE 2

U.S.P.H.S. Research Grants—Total and Environmental Health, Fiscal Years 1947–1951

	Total Grants		*Environmental Health Grants*		
Fiscal Year	*No.*	*Amount*	*No.*	*Amount*	*Per cent of Total Amount*
1951	1,724	$17,304,529	38	$283,128	1.6
1950	1,528	13,599,951	37	299,219	2.2
1949	1,152	11,284,304	30	273,389	2.4
1948	1,014	9,871,351	34	298,158	3.0
1947	320	3,362,263	4	60,372	1.8

Source: U.S.P.H.S., Division of Research Grants

$298,158, or 3.0 per cent of the total was for research in environmental health fields. The ratio of environmental health research projects to all projects supported by the Division of Research Grants and Fellowships, National Institutes of Health, each year since has dropped. In 1951, the total rose to $17,304,529; but only $283,128, or 1.6 per cent, went for environmental health. You will note that even the absolute figure for environmental health (mostly sanitary engineering) was less in 1951 than in 1948. (See Table 2.)

2. The number of U. S. Public Health Service research grants for all health fields jumped from 1,014 in 1948 to 1,724 in 1951; but for environmental health the corresponding rise was small—from 34 in 1948 to 38 in 1951. (See Table 2.)

3. Grants for sanitary engineering research projects recorded by the Medical Sciences In-

TABLE 3

Grants for Sanitary Engineering Research Projects Recorded by NRC's Medical Sciences Information Exchange, Fiscal Years 1946–1951 *

Fiscal Year	Number	Amount
Total:	211 †	$2,132,590 †
1951	46 †	424,351 †
1950	54	559,097
1949	44	502,203
1948	46	436,901
1947	13	178,469
1946	6	31,569

Source: Unpublished data from Medical Sciences Information Exchange, of the National Research Council. The Exchange recently published its first report. See: *Science* 115, 2987 (Mar. 28), 1952. That report does not contain the detail shown in Table 3 above.

* Grants recorded by the Medical Sciences Information Exchange are made by six federal agencies (accounting for more than nine-tenths of the total) and by 43 "public and private" foundations (accounting for less than one-tenth). Most of the amount granted was made available by the Public Health Service (see Table 2). Some nonengineering projects are included.

† The 1951 data cover only the first nine months of the fiscal year.

TABLE 4

U.S.P.H.S. Expenditures for Direct Research—Total and Environmental Health, by Bureau, Fiscal Years 1951 and 1950

Bureau	Total			Environmental Health Only		
	1951	1950	Per cent Increase 1950 to 1951	1951	1950	Per cent Increase 1950 to 1951
Total	$12,048,154	$11,180,376	7.8	$1,019,308	$560,744	82.8
Bureau of State Services	4,929,764	3,992,818	23.5	803,650	559,387	43.7
Bureau of Medical Services	86,065	245,967	66.7	—	1,357	—
National Institutes of Health	6,773,725	6,687,086	13.0	215,658	—	∞
Office of the Surgeon-General	258,600	254,505	1.6	—	—	—

Source: U.S.P.H.S., Research Planning Branch.

formation Exchange, a unit of the National Research Council, have remained fairly stable in the past four years, both in number and in amount. (See Table 3.) Grants for research projects in the health sciences generally, however, have gone up sharply each year. Out of more than 3,000 active research projects in the medical sciences, only 46 are in sanitary engineering.

On the other hand, a contrary indication has to do with recent expenditures for direct research by staff members of the U. S. Public Health Service. Such expenditures rose from $11,180,376 in the fiscal year 1950 to $12,048,154 in the fiscal year 1951, an increase of 7.8 per cent. For direct research in environmental health subjects, the increase was far greater, 82.8 per cent—$560,744 in 1950 to $1,019,308 in 1951. (See Table 4.)

TOTAL EXPENDITURES FOR ENVIRONMENTAL HEALTH RESEARCH

By adding some fairly sound figures and some other figures that are little more than guesses, the Committee arrives at $7.2 million as a rough estimate of the 1951 expenditure for environmental

TABLE 5

Total Expenditures for Environmental Health Research, 1951
(Millions of dollars)

Grand Total:		7.2
Government		2.9
Public Health Service	1.3	
Grants 0.3 [1]		
Direct 1.0 [2]		
Other Federal Government (Atomic Energy Commision, Department of the Air Force, Department of the Army, Department of the Navy)	1.1	
Grants 0.1 [3]		
Direct 1.0 [4]		
State and local government	0.5	
Industry		1.8
Educational institutions		2.0
Engineering schools	1.0	
Other	1.0	
Other (Philanthropic organizations, professional and trade associations, etc.)		0.5

Sources: Tables as indicated, plus approximations. Opinions as to these approximations will be welcomed by the Committee.

[1] Table 2.
[2] Table 4.
[3] Tables 3 and 2—subtraction.
[4] Much federal spending for defense is "classified" information. The figure shown in this table could conceivably be far too small.

health research in the United States. (See Table 5.)

This amount is less than a tenth of all health research expenditures in 1951, as shown in Table 1. Yet prevention of disease can be accomplished in no way that is more efficient than by reducing health hazards in the environment. Clearly, the people of the United States are devoting insufficient attention and insufficient financial support to research in environmental health.

OTHER INDICATIONS OF RESOURCES FOR ENVIRONMENTAL HEALTH RESEARCH

We must not overlook, in considering research resources, that a rough measure of our preparedness to carry on an increased research program in environmental health is to be found in the number of fellowships awarded to graduate students in sanitary engineering and other environmental health disciplines, as well as in the number of candidates successfully completing university curricula leading to the doctorate. Although the Committee does not have complete data on fellowships, the evidence is clear that the number of awards has been small. For instance, the National Institutes of Health (U.S.P.H.S.) in the six calendar years from 1946 through 1951 made but ten fellowship awards to candidates in the broad area of environmental health. Four of these were to sanitary engineers, and there was one each to a botanist, a zoölogist, a parasitologist, an entomologist, a dentist, and an agricultural chemist; and the fields represented were water disinfection and fluoridation, wastes, industrial hygiene, and vector control.

From unpublished data collected by Arthur P. Miller (U.S.P.H.S.) we learn that there have been only 46 doctoral degrees awarded in the United States to sanitary engineers since the turn of the century. (There are no previous records of the award of doctorates in course to sanitary engineers.) Fortunately, 28 of

these doctoral degrees have been awarded during the past decade.

Although the situation with respect to graduate fellowships and doctoral training of sanitary engineers is not bright, the present supply of research man power in the environmental health field cannot be measured by the level of education achieved by sanitary engineers only.[4] It is a well known fact that research in environmental health traditionally has been carried on by investigators trained in a variety of specialized fields including, among others, biology, zoölogy, bacteriology, physics, medicine, engineering, and the various branches of chemistry. For instance, at the present time in the Environmental Health Center at Cincinnati there are no fewer than 21 staff members who have earned Ph.D. or other doctoral degrees—23 per cent of the professional staff—and they represent not only the fields mentioned but also radiology, virology, and veterinary science. Another indication of the fact that research in environmental health is not done solely by sanitary engineers is to be gathered from the types of organizations to which Public Health Service research grants in this broad field have been made over the past five years. We find listed not only engineering schools and schools of public health, as would be expected. We also find listed medical schools, schools of agriculture, and agricultural experiment stations, as well as university departments of biology, zoölogy, chemistry, and bacteriology; rare is the sanitary engineer in these schools or departments.

WHAT NEEDS TO BE DONE

Members of the American Public Health Association are in position to stimulate research in environmental health. Some of them, of course, engage in such research. But all can encourage competent workers in the various disciplines to consider the importance of research into the control of the environment. There are many gaps in the field; about 150 of them have been set down on paper by the Environmental Health Study Section of the Public Health Service. There is much to do.

University professors should encourage more of their best students to go into research aspects of environmental control. Research fellowships are available from the U. S. Public Health Service. The stipends range from $1,200 to $3,600 a year, and postdoctorate fellowships that are renewed are increased $300 over the previous year. However, in the environmental health field, sanitary engineers and other research workers have taken insufficient advantage of these fellowships, as the Committee pointed out earlier in this report in stating that in the past six years there have been only ten fellowships.

Research grants are also available. Table 6 shows that on November 27, 1951, there were 1,871 research projects active as a result of research grants from the U. S. Public Health Service, and that only 47 of these, or 2.51 per cent, were in the field of environmental health. Of the 22 fields, environmental health ranked 16th. Furthermore, other data reveal that the proportion of applications approved for research grants is much smaller in environmental health than in most other fields, which means that research workers in this field should think through their projects and then prepare their application papers as thoroughly as possible.

Finally, we need to think through the type and amount of education needed for competent research work. For example, should the curriculum for the master's degree in sanitary engineering or sanitary science include a research requirement?

In summary, what needs to be done is this: The Committee on the Exploration of Research Needs should do what it can to encourage more environmental

TABLE 6

Active U.S.P.H.S. Research Grants, by Field, as of November 27, 1951

Field (Study Section)	*Active Grants*		*Payment Approved*	
	Number	*Per cent*	*Amount*	*Per cent*
Total:	1,871	100.00	$19,948,685	100.00
Cardiovascular	193	10.31	2,746,389	13.76
Biochemistry	182	9.73	1,715,436	8.60
Physiology	152	8.12	1,294,176	6.49
Morphology and genetics	149	7.97	1,248,959	6.26
Endocrinology	110	5.87	1,271,766	6.38
Metabolism and nutrition	109	5.83	1,052,058	5.27
Mental health	107	5.72	1,240,745	6.22
Hematology	101	5.40	1,236,211	6.20
Pathology	101	5.40	735,337	3.68
Microbiology and immunology	101	5.40	860,301	4.31
Experimental therapeutics	85	4.54	1,219,519	6.12
Surgery	81	4.33	808,501	4.05
Pharmacology	71	3.79	633,150	3.17
No study section *	61	3.26	1,024,047	5.14
Virus and rickettsial	60	3.21	575,931	2.88
Environmental health	47	2.51	359,554	1.81
Dental	37	1.98	277,916	1.39
Tropical medicine	36	1.92	327,605	1.64
Sensory diseases	33	1.77	254,756	1.28
Public health	28	1.49	695,841	3.49
Radiation studies	17	0.91	306,437	1.53
Sectional research	10	0.54	64,050	0.33

Source: U.S.P.H.S., Division of Research Grants
* *Ad hoc* committees consider

health research—that is, to stimulate interest in new, expanded, and revised research activities. And the Committee should encourage the production of new research talent, particularly in the engineering aspects, if environmental health is to advance at the same pace that other fields of science, engineering, and medicine are advancing. The resources being utilized now are far from commensurate with the importance of the subject. In the field of environmental health research, there is no shortage of projects. There is not even a shortage of money. The shortage is of men.

ADDENDUM

(Definition of "sanitary engineering" as approved by the Committee on Sanitary Engineering of the National Research Council, October, 1943.)

The practice of sanitary engineering includes the following activities:

a. Surveys, reports, designs, direction, management and investigation of—
   1. Water works or sewerage systems and closely related engineering structures.
   2. Projects relating to stream pollution, insect and vermin control or eradication, rural and camp sanitation, housing sanitation, and milk and food sanitation.
   3. Systems for the prevention of atmospheric pollution or the control of indoor air, especially the air of working spaces in industrial establishments (industrial hygiene engineering).

b. Professional research and laboratory work supporting the activities listed in (a).

c. Responsible teaching of sanitary engineering and closely related subjects in colleges or universities of recognized standing.

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M. ALLEN POND, Chief
Division of Engineering Resources
U. S. Public Health Service,
Washington, D. C., *Chairman*
EARNEST M. BOYCE
EMIL CHANLETT
ROLF ELIASSEN
GORDON M. FAIR
HAROLD B. GOTAAS
THEODORE A. OLSON

Package Sewage Treatment Plants; and Special Disposal Problems*

Engineering Section

INTEREST in sewage and industrial waste treatment and disposal is probably greater now than ever before, stimulated in large measure by steadily increasing public insistence on adequate and economic measures to conserve the quality of the nation's water resources. Not only is it essential to remove and safely dispose of substances harmful to public health and welfare, but it is more and more apparent that we must take care of mounting community and industrial wastes in such manner as to solve adequately the many other problems involved in the multipurpose uses of our waters.

Economic considerations always enter the picture. It is difficult to apply any benefits-cost ratio to projects for taking care of wastes and abating pollution. Accomplishment of essential improvements at minimum costs, with as complete utilization of wastes as practical, is of major importance to the furtherance of pollution control projects. Your committee desires to present a few specific timely topics relating to this aspect of sewage disposal, laying stress on certain of the trends to develop practical and economical means for putting effluents to work.

Small communities and industries frequently are confronted with difficult problems in providing and operating sewage disposal systems that will adequately meet requirements. In attempting to overcome such difficulties, there has been developed the so-called "package" sewage treatment plant.

"PACKAGE" SEWAGE TREATMENT PLANTS

In a discussion of this type it is essential that the subject matter be defined so that the reader may have a clear concept of the limitations and scope of the subject. For the purpose of this discussion, therefore, a "package" plant is one which is manufactured, constructed, or built for treating small quantities of sewage, generally less than 100,000 gallons per day. Further, the plant must make extensive use of common walls to minimize initial construction and usually employs at least one dual-purpose unit, such as an aerator-clarifier. The use of the term "package" is somewhat misleading in that only the equipment is prefabricated, the basins usually being constructed on the site.

Although the term "package" applied to sewage treatment plants is relatively new, actually "package" plants as defined herein were constructed as early as 1933. For many years relatively few of the plants were built because of defects in the early design, the resistance to adopt the use of dual-purpose units, and failure to actively promote their use. The need for small sewage treatment works to serve small industrial installations and housing developments during World War II accelerated construction of plants of this type. Since World War II an active advertising and promotional program has further increased their use. Basically, however, their development

* Report of the Committee.
COMMITTEE ON SEWAGE DISPOSAL.

and construction is the result of a need for a small efficient sewage treatment plant which has a low initial cost and which can serve concentrations of population ranging from 100 to 1,000. Such plants have been used to serve small communities wishing a sewer system, isolated subdivisions, institutions and industries. In developed areas where land costs are high or the particular population group has a limited area available the small space requirements become important.

A brief description of typical "package" plants might be of interest. Plants incorporating the activated sludge process are generally divided into two classes depending upon whether mechanical aeration or compressed air is used. The earliest plants were of the former type and basically consisted of a square tank with a hopper bottom in which the corners were baffled for the purpose of providing final settling. The center compartment was used for aeration and employed a vaned wheel which drew mixed liquor from the bottom of the tank through a draft tube and sprayed it over the surface of the aeration compartment. There was a direct opening below the baffles into each of the four corners which permitted the mixed liquor to flow outward and the settled sludge to return. Velocity currents created by the aerating mechanism interfered with settling. A later design provided for sealing the corners except for a loading funnel at the water surface connected to each corner, and an ell at the bottom to permit the return of activated sludge to the aeration compartment.

Another design employs a prefabricated sedimentation compartment suspended in the center of the aeration tank. This is covered by an inverted cup-shaped section, the top surface of which is above the water and ribbed to provide more efficient aeration. The tank contents are circulated by means of a draft tube extending up from the bottom through the center of the settling compartment to an inverted cone which diverts the impeller discharge up and outward to the ribbed cover. Sufficient space is allowed between the cover and the prefabricated settling compartment to permit the interchange of liquids. An annular opening is provided between the sedimentation compartment and the base of the draft tube to permit the sludge to reënter the aeration tank. Minor disadvantages to this type are a short weir length and the inability to observe the surface of the final settling tanks. Earlier units had some difficulty with sludge accumulation in the sedimentation compartment.

"Package" plants employing compressed air are of more recent design. Some types have not been in operation for a sufficient period of time to fully evaluate their potentialities. One type employs an unusually long detention period (16–20 hours) with no primary sedimentation. Some of these plants have also been operated without the removal and transfer of sludge to a digester. At least one plant treating strictly domestic wastes in this manner is known to be in operation. At the present time there are insufficient data available to determine whether designs based upon this procedure are satisfactory.

Another interesting development is the utilization of a unit originally designed to soften and stabilize water for the treatment of sewage. No primary treatment is employed and the treatment unit serves both for aeration and sedimentation. A mechanically operated paddle is used in the aeration compartment to supplement the compressed air and to maintain the solids in suspension. A separate digester is recommended by the manufacturer. Pilot scale plants indicated exceptional reductions in B. O. D. and suspended solids. Several full-scale plants are now in operation but

the limited results which have been made available to date are not sufficient to attempt to evaluate the process.

Only one trickling filter plant which might be classified as a "package" sewage treatment plant is mentioned. This unit was primarily designed to serve institutions, schools, and small industries and employs a rotary distributor operated by a water wheel. This device has some advantage in that head requirements for operation of the distributor are low and the unit can be made in small sizes. Primary treatment for the usual installation is by an Imhoff tank but separate sludge digestion could be utilized. Potential odor problems would limit such installations to areas where the plant can be isolated or covered. Except for some unusual features in the Imhoff tank design this plant might be considered of conventional design.

Nothing has been said concerning the so-called "contact aeration" process in which the development of a biological slime occurs on plates suspended in the sewage and aerobic conditions are maintained by means of compressed air discharged through porous plates or orifices near the bottom of the tank. This process has been widely discussed and it was felt that no useful purpose would be served by including further comments in this present discussion of "package" plants. "Contact aeration" plants have been built and, in general, are in satisfactory operation serving populations in the range considered in this discussion. There does appear, however, to be some question as to a satisfactory basis of design for these plants which is sufficiently economical to permit savings in initial construction costs and yet provide the necessary capacity to secure an effluent of satisfactory quality.

Inevitably, with the development of "package" plants many problems were encountered. Among these problems were adequate operation, high operating costs, the possibility of odors, the excessive spray and humidity resulting from certain types of aeration (if the plant was to be located close to residences), and the difficulty of landscaping the plant to prevent deterioration of nearby property values. These problems will all be discussed in more detail later.

The problem of providing adequate sewage disposal for isolated population groups with concentrations of 100–1,000 have been solved in various ways, the type of treatment used depending largely upon local conditions. Where ample space was available and the plant could be located some distance from any residences, conventional sewage treatment processes such as an Imhoff tank or separate sludge digestion plant followed by a trickling filter or intermittent sand filter has proved satisfactory. In some instances septic tanks, usually followed by a covered intermittent sand filter, were constructed where it was necessary to locate a plant close to developed areas. The high maintenance costs of operating covered filters, and the odor nuisance in the vicinity of open filters, whether the media is sand or coarse rock, have limited their use to a considerable extent. Due to the fact that the activated sludge process, if properly operated, is relatively free of odors, the developers of "package" sewage treatment plants have, in nearly all instances, utilized this process.

Through the use of dual-purpose units, steeply sloped hoppers in primary settling units, and common wall construction, several manufacturers have developed plans for small compact sewage treatment works which have a low initial cost, and, with proper operation, are capable of producing a satisfactory effluent under normal conditions with little or no odor. It must be pointed out, however, that operating costs are usually high when compared to either trickling filter or intermittent sand filter installations, the major costs

being the operator's salary and the electrical power requirements. Due to the wide range in cost of electric power and the fact that few dependable records are kept by operators of small sewage treatment works no attempt has been made to present actual operating cost figures for "package" plants.

There are certain disadvantages to the use of "package" plants, the most important being that of operation. Sewage treatment plants utilizing the activated sludge process should be operated by or under the supervision of a competent trained operator. Unfortunately, trained operators command salaries which few small population groups can afford to pay. This has in many cases resulted in the selection of an untrained operator and poor operation. This has led to some criticism of "package" plants without respect for the ability of the plant to produce a satisfactory effluent. A number of state health departments have discouraged or barred the use of plants of this type because of the difficulty in securing continuous satisfactory operation. Solutions for this problem might be found in the supervision of operation by trained personnel from larger nearby sewage treatment plants or through a joint agreement between the owners of several plants of this type to share the cost of hiring a competent operator to supervise their plants. Failure on the part of administrative personnel to recognize this problem and work with others to find a solution acceptable to health authorities will greatly retard the future use of "package" plants.

A further disadvantage to the use of "package" plants has been noted. Municipal officials are reluctant to abandon such plants in favor of a connection to a nearby system, or a cooperative agreement between several population groups to construct a larger, more efficient plant. Some would prefer to build their own plant even though such a connection was available. Obviously every effort should be made to discourage their use under such conditions.

Physical disadvantages of "package" plants are the low settling efficiencies of hopper bottom tanks, and the sacrifice of efficiency and convenience in the use of dual-purpose units. The spray and high humidity in the immediate vicinity of most mechanical activated sludge plants is objectionable where such plants are located close to residences.

In general, the basis for design for "package" plants varies only slightly from the design of comparable units for larger conventional plants of the same type. There is some tendency, however, toward greater aeration capacity to offset partially the lack of adequate supervision. One serious defect of most designs is that hopper bottom settling tanks are used for primary settling. Although this contributes to a reduction in the initial construction cost, it greatly increases the work of the operator and should be discouraged for all but the smallest plants. Some variation in design requirements exists between states. For specific design requirements, therefore, the state agency responsible for the approval of plans and specifications should be contacted.

A survey was made of the conditions and operation of "package" sewage treatment plants throughout the United States by the Committee on Sewage Disposal of the Conference of State Sanitary Engineers early in 1951. The questionnaire submitted also requested a statement of the attitude of the official health agency toward the use of "package" sewage treatment plants in their state. The survey was limited to plants of the activated sludge type having a population equivalent design of less than 25,000. The annual report of the Committee contained a summary of their findings. According to the report 16 of the 48 states had no plants of this type

in population ranges studied. The remaining 32 states had a total of 350 plants which included the so-called "package" activated sludge plants. This survey confirmed that the major problem in the treatment of sewage by "package" activated sludge plants is one of inadequate supervision and operation.

The above report also quoted from the statement made by each of the state health authorities. Most states discourage or are opposed in principle to the use of small activated sludge plants designed to serve a population equivalent less than 5,000–10,000. This reluctance to accept plants of this type for small populations is based largely upon the operation problem. If some solution could be found to this problem there is little doubt but that the general attitude toward "package" activated sludge plants would change.

ARCTIC SEWAGE DISPOSAL

Another interesting aspect of the expansion of sanitary engineering activities in sewage disposal is reflected in the growing amount of attention given to the effect of location and climate on sewage works practice. There have been several recent reports on studies in the Arctic area.

Day [1] states that the design and construction of a workable and economically feasible sewage collection system has been one of the major problems of community sewage disposal in permafrost areas. Observations indicate that the most important factors involved in preventing freezing in collection systems are depth of cover, rate of flow, and grade of sewer line. General temperature studies indicate that throughout much of the permafrost area at depths of eight feet or more temperatures do not vary greatly throughout the year, and fall only a few degrees below freezing.

Although there are many aspects of the problem, the greatest difficulty appears to be that of satisfactory final disposal.

Thomas [2] discusses the efficiency of trickling filters in low temperatures with and without covers, and states that it is believed that the phenomenon of storage of organic solids in films in trickling filters during cold periods is an important factor that must be taken into consideration in the design of filters for the far north. With an average temperature less than 10° F. it may be expected that the films will continue to accumulate over periods two or three times longer than in the states. A comprehensive table showing heat transfer of liquids and construction materials is given, together with formulae for overall coefficients of heat transfer for compound walls of given thicknesses. Factors are given for effect of the shape of tanks together with a sample calculation of heat balance in a typical trickling filter sewage treatment plant.

Clark [3] states that there appears to be strong likelihood that local naturally occurring materials of suitable heat conductivity may be satisfactorily employed in insulating sewerage systems in permafrost areas. More extensive determinations are needed on the heat conductivity of various naturally occurring earth materials to amplify and verify those already made.

Rogers [4] describes the types of utilidor construction used in arctic areas and discusses sanitary hazards associated with the smaller types where piping cannot be inspected or readily repaired.

As regards private sewage disposal, mention is made of the bulletin recently released by the U. S. Public Health Service on septic tanks. This bulletin is being reviewed later on this program by MacKenzie, and accordingly will not be discussed in this report.

UTILIZATION OF EFFLUENTS

Sewage has been used for crop irrigation and spreading on land in the South-

west for many years. In California, in recent years, a strong interest has developed in the utilization of liquid wastes either directly or through reclamation by treatment and recharge of underground waters because of the rapid growth of the state and development of critical water shortage areas. This review covers practices, recent investigations, and significant aspects of the waste reclamation problem in California.

In March, 1951, the University of California's Sanitary Engineering Research Project issued Technical Bulletin No. 4, *Present Economic and Technical Status of Water Reclamation from Sewage and Industrial Wastes*. The report reviews the nature and development of sewage reclamation, compares it with other methods of obtaining water, and defines the conditions under which reclamation appears warranted.

Disposal of industrial wastes to land by methods which result in recharge of ground waters is being accomplished successfully by the Lucky Lager Brewery at Azusa, Calif., and the Exchange Products Plant at Ontario, Calif. In the Los Angeles metropolitan area serious pollution of local water supplies has resulted from uncontrolled discharge of industrial wastes to land and to sumps.

The Los Angeles County Sanitation Districts, the Los Angeles County Flood Control District, and the University of California have recently conducted studies and investigations for establishing basic information on procedures, pollution hazards, and costs involved in reclamation of sewage and industrial wastes through treatment and recharge of ground waters by spreading on land.

The Los Angeles County Sanitation Districts have investigated the possible pollution hazards to ground waters associated with disposal of refuse to abandoned gravel pits, and the Los Angeles County Flood Control District has completed an extensive investigation on the control of sea water intrusion into ground water basins by injection of water through wells to build up a fresh ground water ridge parallel with the ocean.

Segregation of toxic wastes is an important factor in utilization of effluents. Also consideration needs to be given to highly nitrified wastes that are reclaimed through ground water recharge.

DISPOSAL OF NITRATE WASTES

In recent years, several reports have emphasized the dangers of the use of water high in nitrate content by infants. Numerous instances of well contamination by nitrates are recorded with the occurrence of methemoglobinemia in children under six months of age.

Generally in the past, concentrations of nitrate nitrogen in well waters have been considered as the natural result of contact between ground waters and soils or the complete stabilization of nitrogenous material in ground water. Because of the dangers of infant methemoglobinemia if a water supply is encountered with high nitrate content, it should be abandoned in favor of another supply or use of the water restricted for infant feeding. In many cases, the entrance of nitrates into the well water is due to faulty well construction.

More recently, the discharge of wastes containing nitrates has occurred in surface streams and the results noticed in surface water supplies. With such conditions ground water contamination with nitrates is almost certain to occur though its penetration through the ground water would be very much slower and the direct effects less noticeable.

Since World War II, several plants built originally for the production of TNT have been converted to plants producing ammonium nitrate for fertilizer use. In the vicinity of such plants, there is the possibility of direct contamination of surface waters by nitrates.

Ammonium nitrate is the final product of the operation of such plants. Since its market value is only $50 per ton, little attention had been given, until 1949, toward conserving this material. Its conservation is practised primarily to eliminate nitrate waste discharge rather than recovery for economic reasons. During 1949, through the efforts of the Army Industrial Hygiene Laboratory, the loss of material being processed in plants leased from the federal government was reduced approximately 75 per cent. This was accomplished by good housekeeping techniques and better handling methods to reduce losses.

It should be noted that lagooning the waste is not a complete solution to its disposal because of the dangers of constant leaching of the nitrates into the soil and flushing into streams with surface runoff. At the present time there is no feasible treatment method for nitrate wastes. The only recognized possibility is the use of biological ponds wherein the nitrates would become food for plants which, in turn, would be consumed by animal life.

The following recommendations have been made toward minimizing and controlling this waste:

1. Operate such plants only in areas where there is practically no danger of water supply contamination by the plant wastes.
2. Increase plant housekeeping efficiency to the highest level consistent with economical plant operation.
3. Maintain constant surveillance of such plants, their wastes, and the effects of these wastes on surface and ground waters of the area through appropriate federal and state agencies.
4. Emphasize the importance of nitrite as well as nitrate nitrogen in this problem, since nitrite content may also be responsible for methemoglobinemia.

In conclusion, your committee desires to stress the importance of economic consideration in sewage disposal. All possible encouragement should be given to the development of ways and means for putting wastes to work. Achievements to date are pointing the way toward more efficient sewage utilization in conservation of our water resources.

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LOUIS F. WARRICK
Division of Water Pollution Control,
Public Health Service,
Washington, D. C., *Chairman*
ALBERT E. BERRY
F. E. DEMARTINI
RALPH E. FUHRMAN
WILLIAM Q. KEHR
E. A. REINKE
HARVEY G. ROGERS
C. J. VELZ

Committee on Training*

Engineering Section

THREE subcommittees have been organized under this committee. They are the Subcommittees on:

Undergraduate Academic Education
Graduate Academic Education
Field Training

For the third successive year the report of this committee consists primarily of the individual reports of two of the subcommittees. The Subcommittee on Graduate Academic Education, Clarence W. Klassen, chairman, has just been activated and so has no report for this meeting.

Abstracts of the reports of the two subcommittees are:

Undergraduate Academic Education
Leon A. Bradley, Ph.D.
Herbert J. Dunsmore
Samuel H. Hopper
Walter S. Mangold
John M. Hepler, *Chairman*

Consideration has been directed toward training of the sanitarian. During the year 1950–1951 the Subcommittee was able to interest the W. K. Kellogg Foundation in holding a Working Conference on Undergraduate Education in Sanitary Science at Battle Creek, Mich., April 17–20, 1951. Representatives from 15 schools and other interested groups attended. Discussion centered around:

Basic education and degree terminology
Concentration area of study
Faculty and facilities, field training, and relationships
Student recruitment, selection, guidance, placement, and follow-up

A four year curriculum with a Bachelor of Science degree was agreed to. Course content, facilities required, methods of selecting candidates, and a suggested program completed the discussions. A full report of the Working Conference is being prepared and will be available at a later date.

Field Training
Harold S. Adams
Hugh E. Eagan
Herbert H. Hasson
Charles D. Spangler, Ph.D.
Don Suggs
Cranston J. Wilcox
William C. Gibson, *Chairman*

The report of the First Nationwide Working Conference on Sanitation Field Training, held in Chapel Hill, N. C., in April, 1950 (see *A.P.H.A. Year Book* 1950–1951 41, 5:99–112 (May), 1951 for full report) was studied in detail during 1951. Three significant elements of sanitation field training were selected for further definition and study. The development of suitable patterns and techniques in these areas has been particularly troublesome to agencies interested in field training programs. The Subcommittee attempted to approach a solution to them by an orderly analysis of the objectives, principles, and respon-

* Presented to the Engineering Section of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., October 31, 1951.

sibilities, when appropriate, in each area. The three elements or areas were:

Administration and supervision of field training programs
Financing field training programs
Evaluation of field training programs

The full report can be obtained from the chairman of the Subcommittee, William C. Gibson, University of Michigan School of Public Health, Ann Arbor.

ELLIS S. TISDALE
Communicable Disease Center,
U.S.P.H.S.
Atlanta, Ga., *Chairman*
HAROLD S. ADAMS
LEON A. BRADLEY, PH.D.
GILBERT H. DUNSTAN
WILLIAM C. GIBSON
HARRY E. MILLER
CLARENCE I. STERLING, JR.

Chemicals Introduced in Foods*

Food and Nutrition Section

THE Delaney Committee of the U. S. House of Representatives, in its report of January 3, 1951, to the 81st Congress, mentioned that over 800 chemicals have been used or suggested for use in foods.[1] "Of this total," the report continued, "it has been estimated that 704 are in use today, and that of the 704 chemicals only 428 are definitely known to be safe as used. Thus, there are approximately 276 chemicals being used in food today, the safety of which has not been established to the satisfaction of the Food and Drug Administration and many other groups concerned with the health and safety of the public." It was brought out in this report to the Congress that existing federal laws are not adequate to protect the public against the addition of unsafe chemicals, which may be insufficiently tested prior to their incorporation in foods. Numerous witnesses at hearings conducted by the Committee testified that the Federal Food, Drug and Cosmetic Act could well be amended to require that, before a new chemical is permitted to be incorporated in foods, whether purposely or as a contaminant or pesticidal residue, there should be established experimental evidence of its safety for such use.[2]

"In view of the far-reaching consequences of such an amendment," the report to the Congress went on to state, "the Committee is of the opinion that individuals and groups who would be affected by such legislation should be given further opportunity to present their views and to comment on proposed legislation before any specific recommendations are made to the Congress."

Accordingly, the Committee was authorized to continue its investigation with the same personnel as before, except for the replacement of the Hon. Frank B. Keefe by the Hon. Walt Horan. Mr. Alvin L. Gottlieb was added to the staff as Associate Counsel to Chief Counsel Vincent A. Kleinfeld.

The Delaney Committee conducted a series of hearings in Washington, D. C., and on the Pacific Coast, and a final report will be made to the Congress after their studies have been completed.[3]

It is the opinion of competent observers that the weight of the evidence developed at the hearings is overwhelmingly in favor of the recommendation that the Food, Drug and Cosmetic Act be amended along the lines indicated.

During the year 1951 the Food Protection Committee of the Food and Nutrition Board, National Research Council, was organized. Its headquarters are in Washington, D. C., and its full-time staff is headed by Dr. J. L. St. John. This National Research Council committee is established to carry out the following functions:

1. The Committee will assemble scientific information on both incidental and intentional chemical additives which are used or proposed for use in or on foods, and will summarize and evaluate this information and make its conclusions available in usable form to those interested.

2. The Committee will advise and assist industry and federal and state government agencies in the integration of research on the

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* Report of the Committee.
COMMITTEE ON CHEMICALS INTRODUCED IN FOODS.
Organized 1948. Published Report: *Year Books*, 1949–1950; 1950–1951.

utilization of chemicals in food production, processing, and preservation, and will promote additional research, by existing agencies, which in the opinion of the Committee appears desirable in the public interest. The Committee itself, however, does not propose to conduct or finance research.

3. The Committee will seek to develop guiding principles and standardized procedures essential to safeguard food.

4. The Committee will encourage and aid in the distribution of accurate scientific information to the general public.

Several reports have been issued by the Committee during the year and, in addition, informative articles have been published by its executive secretary.[4]

Of particular interest is a statement issued on the use of surface active agents in foods.[5] While this question arose in connection with the hearings on ice cream, being conducted under the auspices of the Federal Security Agency, Food and Drug Administration, the chemicals proposed for use in ice cream include some of the products which are currently being used in the production of commercial bread, cake, and some other foods.

The Food Protection Committee pointed out that the use of surface active agents could not be viewed solely on the basis of a single item of food, such as ice cream, but must be evaluated on the basis of the total intake from all foods to which these substances may be added. The evidence available to the Committee, they concluded, was insufficient to evaluate either the safety or harmfulness of these products. The reasons advanced for this conclusion are:

1. The experiments have not been designed in a manner to delineate properly the toxic potentialities of the compounds. This is especially true of the non-glycerol surface active agents.

2. The knowledge of the metabolic fate, including their contribution as a source of calories and possible toxicologic effects of these compounds, is insufficient. This knowledge is most notably deficient in the portions of the molecule other than glycerol and fatty acids.

3. There is a lack of information bearing on the influence of the acute and chronic ingestion of surface active agents on pathologic changes which may accrue in a variety of species of animals.

4. The evidence available does not allow an accurate estimate of the qualitative and quantitative distribution of surface active materials of the mono- and diglyceride type naturally occurring in foods.

Much of the initial deliberations of the National Research Council Committee was devoted to questions of nomenclature, distinctions in meaning between the terms "toxicity" and "hazard," and basic considerations in the evaluation thereof from the health point of view.

There are many indications that the scrutiny which is being given to chemical additives to foods already has brought about more effective application of existing laws, and an increasing awareness on the part of chemical manufacturers of their obligations. It is unfortunate that some publicity in newspapers and magazines may have presented an alarming view of the situation regarding chemicals in foods. It should not be overlooked that the food and chemical industries have made possible the present gratifying position of the United States as a producer and processor of wholesome food products. The fact that leaders in the food and chemical industries have expressed themselves in favor of more rigid scientific controls over the use of chemicals in foods is convincing evidence that the maintenance of nutritional well-being is recognized as a prime objective and as an obligation which industry assumes jointly with scientists and public health workers.

The Committee on Pesticides, Council on Pharmacy and Chemistry, American Medical Association, has published informative reviews of the pharmacology and toxicology of DDT and technical benzene hexachloride, and the *Journal of the American Medical Association* has expressed itself editorially on insecticide storage in adipose tissue.[6-9] The chlorinated hydrocarbons, such as DDT and

chlordane, are soluble in fats and are stored in the fatty tissues of the body. These compounds possess a high order of toxicity, and their uncontrolled or unwise use is not desirable.

It is not as well known as it should be among public health workers that the Pharmacology Division of the Food and Drug Administration is continuously performing a prodigious amount of investigational work in the interests of public health. Dr. Arnold J. Lehman has summarized some of the work of the Division in an excellent manner.[10, 11] The articles cited in the present report contain many references to other detailed reports pertinent to the subject.[12]

Although the problems which led to the formation of the present committee are not fully solved, much progress has been made during the past year.

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FRANKLIN C. BING, PH.D.
30 West Washington St.,
Chicago 2, Ill., *Chairman*
J. O. CLARKE
WILLIAM J. DARBY, M.D.
SMITH FREEMAN, M.D.
HERBERT E. LONGENECKER, PH.D.
ROBERT W. PILCHER, PH.D.
BERNARD E. PROCTOR, PH.D.
HAROLD R. SANDSTEAD, M.D.
HENRY T. SCOTT, PH.D.

Evaluation Studies Which Have Contributed to School Health Services and Education*

School Health Section

THE purpose of this report is to indicate some of the influences which the evaluation process has had on the development of school health programs in this country, to cite a few practicable examples of such evaluation in specific programs, and to suggest how the School Health Section may serve to stimulate evaluation.

During the fifty-odd years of their existence, school health programs have reflected many influences. Local needs and interests, commercial and other vested interest pressures, changing concepts in educational theory, practices in other countries, opinionated bias and prejudice, research both scientific and pseudo scientific, and evaluation studies —all have had influence on the shaping of the programs that exist today.

School health programs developed rapidly in the first 25 years of this century, particularly in the cities. In 1925 the American Child Health Association published the findings of a study of practices in 86 cities. Here, available for the first time, was a picture of the kind, volume, and distribution of services being rendered.[1] So great was the diversity of practices and theory that the American Child Health Association felt impelled to organize the School Health Study for the purpose of evaluating critically the effectiveness of existing practices in terms of end results detectable in children. These studies were the first earnest attempts at evaluation of school health to be done in the United States, and nothing of comparable quality and scope has been done since.

The work of this group, reported in the five classic school health research monographs between 1929 and 1932,[2] has had great influence upon both services and instruction in present-day school health programs. The study staff devoted much effort to developing precise tools for measuring the worth of various components of the programs. Many concepts underlying good practice in school health services today emerged from these first school health evaluation studies. Among them were the importance of teacher participation in case finding and follow-up, the values of nurse-teacher rapport, the weaknesses of mass annual medical examinations, and above all, the necessity for continual evaluation of all elements in the program.

A few years later the New York study reported in *Physical Defects—The Pathway to Correction* appeared as a continuation and extension of the earlier studies with its careful scrutiny of the follow-up process.[3] The Astoria Study and demonstration put into practice many of the positive findings of this

* Report of the Chairman of the Committee on Evaluation, to the School Health Section at the Annual Meeting in San Francisco, November 1, 1951.

earlier work and owed much of its success and far-reaching influence to the fact that it represented a synthesis of proved components.[4] Yankauer's two recent evaluation studies of the case finding methods established as part of the Astoria plan continue the chain of evaluation and are examples of the kind of scrutiny that various elements of all programs need from time to time because conditions change.[5, 6]

Health instruction has undergone even more changes with the passage of time than health services. Traditional educational concepts encrusted health instructional programs far into this century, as is reflected in the health education tests developed by the A.C.H.A. study and published in 1929. More recently has come the realization that the teaching of health facts in themselves provides neither desirable health objectives nor effective instruments for modifying behavior. Changes in educational philosophy, together with negative evidence yielded by evaluation procedures, bade us reëxamine our health teaching, so that health instruction became more concerned with change in behavior and attitudes and less with parroting of health facts. As a result, earlier methods of testing successful health teaching became obsolete.[7] A shift in objectives necessitated a change in methods of examining the results. Although it is sometimes difficult to measure the intangibilities of behavior modified through health teaching, this has not proved impossible nor beyond the abilities of ordinary school-community groups.

Unfortunately, *evaluation* often suggests the need for the services of "experts" who deal with statistical formulas and speak a "gobbledegook" unintelligible to the rest of us. Some of the A.C.H.A. monographs dealing with tests and measurements may have contributed to this impression. The development and validation of many testing methods *is* work for experts—but once developed and tested, many of them can be applied by school personnel to their everyday tasks. For example, the comparative studies of vision-screening methods conducted by Shaffer[8] and in the St. Louis study required research methods, but the validated screening devices can be used by any careful worker according to prescribed criteria.

Similar considerations also apply to measuring the effects of health instruction. School-community health projects such as those encouraged through the W. K. Kellogg Foundation are exciting illustrations of attempts to measure basic changes in health beliefs, attitudes, and behavior. In Michigan, for example, the general aim of the project was the improvement of health instruction in secondary schools through the establishment of functional community health service courses. Great care was taken in determining health objectives, and many methods were employed in appraising the objectives. The courses provided students with such practical experiences as planning and carrying out vision and hearing testing, immunization programs, and visits to community health agencies. To secure evidence of reactions to the courses, opinionnaires were devised for students, school administrators, and executives of voluntary and official agencies. The results gave overwhelming evidence that the objectives had been achieved; furthermore, many helpful suggestions came from students and community leaders as to how courses could be improved in the future. In the evaluation of the projects in Michigan, use was made also of such instruments as health inventories, various health record forms, and parent interviews. In the cross-section sampling of parent interviews, evidence was clear that the course was affecting the behavior of students outside the classroom, for it was not unusual to find that "daughters talked about the things they

were doing and put them into practice at home, thereby influencing the attitude and behavior of other members of the family."[9-11]

These measuring tools utilized in the Michigan project were not based on highly complex research designs, but were simple and straightforward instruments selected to assist in answering the question, "How much progress has been made toward reaching predetermined goals?"

One meaningful approach to health instruction is through an examination of facilities and services. A project, again sponsored by Kellogg grants, in the Petersburg, W. Va., school points this up. Pupils of the 8th grade decided to investigate some 13 community health areas, including everything from health factors in their own school to problems relating to public parks and rest rooms. The 8th graders involved the entire school, including children of the 1st grade and set themselves a 3 year period to investigate community health problems, check facts, make recommendations, and work for improvements. For example, 8th graders studied garbage disposal problems, using photography, personal interviews, and questionnaires to secure facts. After having made the field visits, they drew maps of the city indicating the location of trash piles, sewage lines, and sewage disposal points. The 5th and 7th graders undertook as their project public parks and made a preliminary study of 10 public rest rooms. They devised a questionnaire for the managers and sponsors of these rest rooms to secure information about their use and conditions of sanitation. Then committees of the 7th grade did further investigation through visits to public rest rooms and personal interviews with the managers.[12]

The Petersburg school-community project is a good illustration of how evaluation can be accomplished by the children themselves. Appraisal of objectives required neither evaluation experts nor creation of complicated research designs. In Petersburg, evaluation became a real and meaningful process as children observed their objectives being met through such activities as repairs made to their school, installation of drinking fountains, elimination of insect-breeding places, addition of new sewers, steps taken toward controlling poultry and livestock within the city limits, and the immunization of more children.

Evaluation, then, might be thought of as the process of seeking an answer to the question, "How much progress has been made toward reaching the predetermined goals of this procedure?" It is an appraisal according to a set of objectives; it is not mere description nor analysis. It is an energetic process of stock-taking to determine what yields results, what is outmoded, what was useful but is no longer applicable.

It is seldom possible or practicable for personnel who are working in a program to undertake the evaluation of the entire program at one time. But the program can be separated into manageable parts if the relation of the part to the whole is kept clear. Thus, the evaluation of a case finding program for acoustically handicapped children in a school might consist of:

I. Setting down the objectives of the various elements, such as:
   a. Selection of children with hearing loss of 20 db. or more in any 2 frequencies, or other criterion agreed upon.
   b. Accurately recording the findings.
   c. Joint formulation of follow-up plan by physician, nurse, teacher, technician, parent.
   d. Initiation of follow-up resulting in diagnostic examination and medical treatment if indicated.
   e. Adjustment of school environment.
   f. Institution of lip reading instruction if necessary.

II. Selection of appropriate tools for the evaluation of each of these elements.

III. Measuring each element.

IV. Coördination of the findings, and

V. Redirection, reorientation, pruning, or expansion of the program as a result of the findings.

A correlative result of such evaluation of the separate parts of a school health program is that in examining each separate spoke, one sees also that it is only a part of the whole wheel. School health services and instruction, theory and practice, facilities and services, needs and objectives are interbound. This reciprocity is especially apparent in a relatively new aspect of school health programs, that of activities designed to deal with the promotion of mental health and the detection and guidance of children who have developed emotional problems. As yet few careful evaluation studies in the mental hygiene field have been reported. A sound approach is that indicated in the State of Washington, where foresighted steps were taken to set up measureable indexes of adjustment and maladjustment and ways to evaluate changes in the children.[13] They provided a base line for evaluation *before* beginning a demonstration school mental health program.

A committee of the Group for the Advancement of Psychiatry has reported on a survey of four promising mental health promotion projects in schools. Careful evaluatory studies are urged in their report to lend justification for the expansion of such programs to other school systems.[14]

It is suggested that the School Health Section might serve to stimulate interest and activity in evaluation in two ways:

1. To establish a panel of qualified personnel in various aspects of school health who would be willing to give advice to individual workers in school health desiring to undertake simple evaluations of certain aspects of the programs they are helping to carry out. It is felt that there may be many physicians, nurses, administrators, or teachers who would like to undertake such evaluation studies but who would appreciate help in thinking through approaches and a selection of methods.

2. To bring to the attention of appropriate foundations and federal agencies (USPHS, Children's Bureau, Office of Education) the great need for evaluation in this field in which large sums of public funds are being expended. There needs to be support for projects whose primary purpose is evaluation, just as were those of the A.C.H.A and the New York studies.

The cost of these projects is very little compared to the great influence they have had in improving programs throughout the country.

It is pointed out that the major evaluation studies of the past have all dealt with programs in metropolitan areas and that no comprehensive studies have been made of the programs of school health being carried out in rural areas, where peculiarly difficult problems exist and where millions of children live.

JESSIE M. BIERMAN, M.D.
School of Public Health,
University of California,
Berkeley, Calif., *Chairman*
WESLEY CUSHMAN, ED.D.
HELEN FORMOS, M.A.
WILLIAM GRIFFITHS, PH.D.
ALFRED YANKAUER, M.D.

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Use of School Health Records*

School Health Section

IN a report of the World Health Organization (Expert Committee on School Health Services. Report of the First Session. Technical Report Series No. 30, April, 1951, p. 35), it is suggested under the topic of "Further Studies" that school health records be studied in terms of their use in:

a. Guidance of children and their parents;
b. Improving supervisory and administrative practices;
c. Providing basic research information in planned studies in child health.

This includes a wide range of school health practice, and your committee felt that a partial review of some of the work already done in these fields might be useful to the members of the Section in their own appraisal of school health record uses.

As pointed out in a report of this committee last year—the form which the school health record takes will be largely governed by its local application, and while all records must of necessity contain basic identifying data, medical history, physical findings, and follow-up notes, the method and form of recording such information will be best left to the local unit which will use the record.

Another point which was brought out at the last meeting was that "records, however brilliant in conception, do not serve a useful purpose unless the persons using them understand and record on them conscientiously, concisely and fully."

* Report of the Committee on School Health Records presented to the School Health Section at the Seventy-ninth Annual Meeting of the American Public Health Association in San Francisco, Calif., October 30, 1951.

SUPERVISORY AND ADMINISTRATIVE PRACTICES

With these preliminaries in mind the attention of the Committee was directed toward the three major objectives mentioned in the foregoing. Perhaps this group will be more immediately interested in "the use of school health records in improving supervisory and administrative practices." It is standard practice in some school health services to record annually the frequency and kinds of physical defects or adverse health conditions discovered and the extent to which follow-up leading to correction was obtained. This subject was discussed at length at the 1949 meeting of the Records Committee. Because of the errors in collecting and interpreting such data by varied and changing personnel, it appears that routine compiling of these data does not lend itself to sound budgetary practice. Moreover, in directing attention to mass diagnostic data rather than to children, the individuality of the school child is submerged and there is danger of the administrator's losing sight of the personal element so necessary in dealing with school children. It is suggested that the simple device of determining the number of children to whom service is rendered by kind of service performed, for example, new admission examination, screening, immunization, follow-up visit, etc., will give accurate data for purposes of both financial budgeting and service distribution.

The use of school records for surveys to study a particular program, such as eye or cardiac, however, can be highly productive in evaluating the usefulness

or weaknesses of a program and thus can lead to sounder administrative practice. Such surveys are best conducted over a limited period of time and by special personnel assigned to the task.

An example of how a study of school health records with respect to physical defects may affect administrative practice was found in a recent study in New York City. In the records of about 14,000 children who had been referred to the medical room for examination by the physician over a time interval of two weeks, there was a sufficiently large number of newly discovered health problems to warrant the addition of another *routine* physical examination. This was in addition to the routine new-admission examination, which was the only one required at the time of the study.

One of the most difficult things to measure in the school health service is the quality of service rendered to the child. One way of approaching this, in a limited way, is to determine the number of referrals for medical care and the amount of follow-up necessary to obtain definitive treatment. Frequently such information can be determined from a study of the child's medical record. Such a study may reveal weaknesses in the referral system or may indicate whether the referral itself is a justifiable one.

The Committee suggests further that a periodic review of the school health records, especially as it is done by the nursing supervisory staff in some cities, will be very enlightening. Obsolete procedures long thought to have been discarded may be found to be in actual use at some point in the school districts. Some routinely recorded data considered important at one time may be found to serve no useful purpose. Thus the health records are often a mirror of the efficiency, administration-wise, of the entire school health service program; and their periodic review may serve as a useful housecleaning tool. In addition, the periodic review of records can serve as an effective means for stimulating interest in the importance of good record-keeping and its consequent improvement in service.

GUIDANCE OF CHILDREN AND THEIR PARENTS

The Committee is of the opinion that while a great deal has been said and written about the value and desirability of individual health guidance to parent and child, not much consideration has been given to the part which the school health record can contribute to such guidance. Often the record may be of value indirectly, as well as in presenting concrete material for the subject of a parent-doctor or parent-nurse conference. Thus the school nurse may note that the record of a child sent to a medical room shows that he has been absent repeatedly over long periods of time and yet his complaint is a minor one. It frequently occurs that a serious cause for such absenteeism is found in subsequent discussions with the teacher and parent and it may be of such an obscure nature that it is not apparent to the classroom teacher.

In a like manner, a perusal of the school health record, although not specifically pointing to a physical abnormality, may give an indication that the child is making an improper school adjustment.

It has been discovered upon studying school health records that insidious changes over a period of years in the vision and hearing of the child may cause serious maladjustment. Yet when the change from year to year is noted, it appears very slight.

What this points out is that the careful study by either the teacher or nurse of the child's record, not only at the time of his visit to the medical room but by periodic review, will often lead to the discovery of adverse health conditions which may not be apparent at the time the child is seen by the health person-

nel. Ample experience indicates that a joint review of a medical and scholastic record by the teaching and health personnel leads to the discovery of conditions which would not have been apparent had this not been undertaken. Such a review of records provides good and convincing material when parents are called in for conference on school health problems and should be encouraged in all school health services. Moreover, record review can be of value in planning the school health instruction program. For example, if large numbers of health problems are discovered, and particularly if they are of a similar nature, the health instructor will be provided with material for timely and appropriate teaching.

RESEARCH

A study of school health records from an epidemiological standpoint may often be correlated with other information available from health department files or community clinic files in appraising immunization status and procedures or diagnostic tests currently being used or contemplated in the school system. This is especially true in such activities as tuberculin-testing, x-ray surveys, and studies of immunization status against diphtheria and smallpox. These are but a few examples of the kind of use to which school health records may be put to obtain information which may be highly important in providing basic data for future studies in the administrative practices of the school health service.

In the development of research programs in school health, the first line of inquiry is often directed toward what is already known about the subject. Pertinent and supporting data often can be obtained from the school health records and from no other common source. An example of this is found in the case of rheumatic fever projects. In order to get the case material for study, it is necessary that the study group be apprised of the children to be included in the study and where they are located. School health records are a common source from which this information can usually be obtained, and it is from this basic information that the study goes forward. This type of inquiry, of course, applies to other specific kinds of studies. For instance, when studies on *tinea capitis* are contemplated, the present status of a school population with respect to this disease can usually be determined by a study of the records. They will show results of previous surveys and indicate whether surveys are immediately needed. Often proposed research programs directed at the incidence of certain disease conditions are presented to school health personnel and the question arises whether the study would be a worthwhile venture. It has been found that by taking statistically significant samples of school health records and inquiring as to the specific conditions involved, the question could often be answered.

This is not to imply that data on school health records should be available for all forms of specialized research programs. Records for such studies must be developed so as to be suitable for the purpose intended. But it must be emphasized that for the school health records to be useful in any of the categories mentioned in this report, full and accurate recording must always be done.

ROBERT W. CULBERT, M.D.
Director, Bureau of School Health
New York City Department of Health, New York, N. Y.
Chairman
JESSIE M. BIERMAN, M.D.
CLAIRE A. CHRISTMAN, M.D.
MOREY R. FIELDS, ED.D.
HAROLD JACOBZINER, M.D.
ALBERT D. KAISER, M.D.
CHARLES L. MAXWELL, M.D.
HAZEL M. O'NEAL
RUTH TAYLOR

Research Needs in School Health*

School Health Section

DURING the 1950 A.P.H.A. meetings in St. Louis the School Health Section Committee on Research decided to gather information about current research in school health and to prepare a list of problems, issues, and questions in the school health field upon which research is needed. This report summarizes the Committee's findings in pursuing these two objectives.

Within the past five years there has been considerable research relating to school health reported in the following indexes and compilations:

1. *The Education Index*, published by the H. W. Wilson Co., 950–972 University Ave., New York, N. Y., is the best single source of information about research in school health.
2. *The Quarterly Cumulative Index Medicus*, published by the American Medical Association, 535 N. Dearborn St., Chicago, Ill., contains numerous references to research related to school health, particularly in such areas as child growth and development, physiology, mental health, health services, and disease control.
3. *Doctoral Dissertations Accepted by American Universities*, published by the H. W. Wilson Co. and since 1945 edited by Arnold H. Trotier for the Association of Research Libraries.
4. *Doctors Dissertations Under Way in Education*, since 1946 published in *The Phi Delta Kappan* and prepared by Carter V. Good and (beginning in 1951) by Rolfe L. Hunt.
5. *Review of Educational Research*, published by the American Educational Research Association, of the National Education Association, Washington, D. C. Three recent issues which particularly relate to school health are:
   Mental and Physical Health—Vol. XIX, No. 5, Dec. 1949
   Growth and Development—Vol. XX, No. 5, Dec. 1950
   School Plant and Equipment—Vol. XXI, No. 1, Feb. 1951
6. *Status of School Health Services*, a report prepared by the Committee on Status of School Health Services (Dr. Leonard C. Murray, chairman) of the Society of State Directors of Health, Physical Education and Recreation (April, 1949), lists studies and projects in school health services reported from about 30 states.
7. *Research and Evaluation Projects in the Field of Health Education*, a report prepared by the Committee on Research and Evaluation (Dr. Ruth E. Grout, chairman) of the A.P.H.A. Health Education Section, and published in the A.P.H.A. Year Book for 1950–1951. This report contains brief descriptions of several research projects in which school systems are coöperating with voluntary and official agencies, not only on school health but on broader aspects of community health.
8. *Research Relating to Children*,† prepared by the Clearinghouse for Research in Child Life (Children's Bureau, FSA). These publications contain information concerning current research in all phases of child life—physical, psychological, and social. The first bulletin covers studies reported from December 1, 1948 through June 30, 1949. Supplement No. 1 covers the period through March 31, 1950; Supplement No. 2 through July 31, 1950; and Supplement No. 3 through December, 1950.

The following publications contain many suggestions for needed studies in the school health field and for improved organization of information which may already exist:

* Report of the Committee on Research to the School Health Section. A summary of this report was presented at the Seventy-ninth Annual Meeting of the American Public Health Association in San Francisco, October 30, 1951.

† Copies of these periodic inventories were on exhibit in the Children's Bureau booth, No. 1005–1006-S, at the Seventy-ninth Annual Meeting of the American Public Health Association in San Francisco, October 29–November 2, 1951.

1. *Report of National Conference for Cooperation in Health Education*, Jan. 25–26, 1951.
2. *Physicians and Schools.* Reports of the First and Second Conferences on Physicians and Schools, Oct., 1947, and Oct., 1951.
3. *Priorities in Health Services for Children of School Age.* Recommendations by a Special Committee appointed by the Federal Security Agency, July, 1949.
4. *Report of the Committee on Research.* A.P.H.A. School Health Section in Section News Letter, Jan., 1951.
5. *Report of Expert Committee on School Health Services.* World Health Organization Technical Report Series, No. 30, Apr., 1951.
6. *Review of Educational Research:* (a) School Plant and Equipment, Vol. XXI, No. 1, Feb., 1951; (b) Mental and Physical Health, Vol. XIX, No. 5, Dec., 1949.

According to these publications and to comments from members of the Committee on Research some of the current school health problems, issues, and questions concern:

PLANNING THE SCHOOL HEALTH PROGRAM

We have a lot to learn about planning for school health programs in terms of the health needs of boys and girls, the health needs of the home and community, and the available health personnel, services, and facilities, rather than in terms of administrative expedience. Some of the many questions in this phase of school health are:

1. What should be done in education and health for civil defense as it relates to school health?
2. How can we further strengthen the beneficial relationships between school health and public health, including the relationship of voluntary health agencies to the schools?
3. How can we best coördinate school health into the community's child health program?
4. How can we get citizens in the community interested in, concerned with, and involved in school health programs?
5. How can we broaden the quality of health education so that other fields may make their greatest contribution? How can the physician, nutritionist, sanitary engineer, and other professional people contribute more to the development and conduct of school health programs? This, incidentally, the Committee believes is unquestionably one of the most important problems to be faced in making progress in the school health field.
6. What can be done to meet the personnel needs for a well rounded school health program?
7. How can communities be stimulated to study their school health programs in order to determine priorities which can be met with limited personnel? What criteria can be used to evaluate school health programs in order to determine how to maintain them with limited personnel?
8. Can we develop more effective ways of solving school health problems in rural areas, where schools, homes, and health resources are widely separated?

HEALTH TEACHING IN SCHOOLS

Most research in the area of health education emphasizes descriptive studies and includes outstanding discussions of world interest in better organization for education and health. Some studies relate to the improvement of teaching methods and their evaluation in terms of better health practices. There continues to be a real need for a better definition of health education problems for research and the methods that may best be employed in their intensive study.

1. To what extent are we bridging the gap between health knowledge and health behavior? Can we better apply what the psychologists have learned about human motivations?
2. Does our health teaching keep pace with changing needs of individuals and society? A study of leading causes of death among children and young people clearly indicates a tremendous waste from accidents. Very little has been done to determine preventive measures in the accident field. Problems such as cancer, rheumatic fever, and pneumonia are continuing problems, but there are some other significant ones such as homicide among the 15–19 year old group of boys, appendicitis in the 10–14 year olds, and puerperal disease among the 15–19 year old girls. Much more needs to be done in relation to these often controllable causes of death.
3. How should special health topics such as sex education, consumer health education,

temperence be included in the modern school curriculum?

4. What influences have the recent sex education films had on boys and girls? Under what circumstances are these films most helpful?

5. To what extent does school health education carry over into adult life, and to what extent do parents receive health education through the health program in schools?

6. How can school health education to promote the use of medical and health facilities be related to the availability of these facilities in the community?

HEALTHFUL ENVIRONMENT

While there has been extensive research concerning the healthful physical environment, many of the results have been inconclusive and controversial. The main areas of needed research involve the evaluation of: (a) natural and artificial lighting, (b) heating and ventilation, and (c) sanitary provisions and facilities.

1. What are the illumination conditions (intensities, brightness ratios, etc.) under which efficient and comfortable seating for different school activities are made possible?

2. How are these conditions affected by window placement, louvering, external fins, reflection factors, and classroom management?

3. What is the physiological effect of long exposure of natural lighting on the working surface?

4. Is automatic photronic control feasible as a solution of light variability?

5. What are the effects of building orientation, room widths, and ceiling heights on lighting?

6. What is the relative illumination through different types of transparent, translucent, or directional panes and blocks?

7. Is natural lighting originating below eye level effective or suitable?

8. What is the effect of different types and colors of window shades and wall finishes on natural lighting?

9. What are the best conditions of arrangement and area of windows and translucent areas?

10. What is the effect of size of windows and mullions on natural lighting and visibility in the classroom?

11. What is the effect of placement of equipment on classroom lighting?

12. Is unilateral lighting suitable for classrooms where tables and chairs are used?

13. Is multilateral lighting suitable for the colder climates?

14. Is window-gravity ventilation feasible and satisfactory in all climates and seasons?

15. If mechanical systems of heating and ventilating are used, what are the optimum volumes of air per pupil, numbers of air changes, and proportions of fresh and recirculated air?

16. What are the optimum temperature and humidity conditions for health and alertness in the different school activities?

17. Can air-conditioning be provided successfully and economically under typical school conditions?

18. What ventilation problems arise because of differences in building design and materials?

19. What economies can be effected by separate heating circuits for areas used only part time?

20. To what extent, and by what means is air sterilization desirable and feasible?

21. In radiant heating, what are optimum panel areas, locations, and temperature?

22. What controls may be used to compensate for heating and cooling lags in radiant heating?

23. What are the special requirements of ventilation in toilets and locker rooms?

24. To what extent and under what conditions are germicidal lights and aerosols effective?

25. What are the toilet requirements for different pupil-age levels and types of activities?

26. What are the requirements for drinking, bathing, and washing facilities in the whole school program?

The whole question of democratic human relations in the classroom, or the mental, emotional, and social environment of the school as it relates to health, forms an area where extensive research is needed. A few studies have been made on the dynamics and mental hygiene of school administration. The application of sociometry to school administration needs much further exploration.

More research is needed to determine the most effective methods of preparing workers in the mental health field. There is also need for more accurate knowledge about the conditions that give rise to conduct disorders and neuroses in childhood, and about effective ways in which

conditions can be changed so that individuals can develop, through their own efforts, the best mental health possible for them.

SCHOOL HEALTH SERVICES

Too often school health services are carried on without proper evaluation, and we tend to be bound by tradition. There is urgent need for research into many phases of school health service and particular need for evaluation of procedures, not only in terms of defects found and remedied but also in terms of educational outcomes in the child, increased understanding of the child by the teacher, and increased provision of special programs of education for the exceptional child.

Some suggested studies in this area are indicated by questions which include:

1. What is the most effective way of getting a useful history of the child? What specific information should be sought? Can it be gathered best by a questionnaire filled in by the parents, by an interview conducted by teacher, nurse, or physician?

2. What are the values of laboratory tests in the screening process? Are there simple laboratory tests which can be performed with sufficient uniformity and ease of interpretation of results to make worth while their performance by nurse or physician or having teacher or nurse collect specimens?

3. Are there age groups in which it is particularly important to test hearing and vision? Should the age factor introduce a variation in the frequency of testing?

4. What procedures will give best results in audiometric screening testing? Perhaps we need a big research project in hearing testing similar to the St. Louis work on vision testing of school children.

5. What is the optimum frequency for measuring height and weight routinely?

6. What school groups should be given health examinations and when should these examinations be conducted?

7. How can adequate facilities for health examinations be secured?

8. How can examinations by private physicians be coördinated into the program of continuous health appraisal?

9. How can we make better use of school health records, and of the recordings made by staff in terms of (a) guidance of children and their parents, (b) improving supervisory and administrative practices, (c) providing basic research information in planned studies of child health?

10. In regard to health records, what type of records should be used, what should be the content, how should they be used, and by whom? How can information be transferred back and forth between the teacher's record and the medical staff record, and what is the most effective method of transferring the record itself from one person to another? How can we develop an uninterrupted record on each boy and girl from kindergarten through senior high school? How can we assure correct interpretation of information in the record by all who use it?

11. What can be learned from the mass of accumulated data on school health records? Some school systems have records covering a 30 year period.

12. To what extent do over-referrals become a public relations problem? What are some of the effective ways of facing the problem of over-referrals?

13. How can communities be informed about the need for more adequate health and medical services, and ways of meeting these needs?

14. What are the sound bases for planning the development of diagnostic and treatment facilities when those facilities are not available; and for wiser utilization of existing qualified medical and hospital facilities to meet the needs of the indigent and medically indigent?

15. Is revaccination at time of entrance to school sufficiently valuable as a public health procedure to justify the expenditure of time, facilities, and funds for the purpose of revaccinating children who have already been vaccinated?

16. What methods are most satisfactory for the management of the "nuisance" skin diseases? Particularly, what procedures should be followed concerning exclusion, the place at which the child should receive treatment, and criteria which might be used for readmission?

17. Is exclusion of children with upper respiratory infections an effective method of controlling the spread of such infections?

18. Are there any effective steps that can be undertaken with children of school age to prevent the occurrence of, or progression of, visual defects?

19. How can the new types of preventive dental health programs be used in mass prophylaxis campaigns?

20. With the development of new types of dental programs, what should be the education, standards, and methods of use of dental auxiliary personnel?

21. To what extent are the different methods of assessing nutritional and growth status effective and practical for use in the school health program?

22. What is the effect of school feeding programs on the physical growth, emotional reactions, and social adjustments of children? What are the attitudes and practices of parents when school meals are provided?

23. How can special diets be served in a school lunch program? Many administrative difficulties arise in connection with providing special meals for diabetics, nephritics, or epileptics, and yet many children depend upon the school lunch as the main meal of the day.

24. Would it be possible to demonstrate the influence of candy upon the nutrition and dental health of children by a carefully controlled study of the teeth of children in a school which sells candy to children and the teeth of children in a school which does not sell candy to children?

25. How can the health services for the handicapped child be coördinated with the health services for all children?

26. What are the problems encountered in the effective administration of a health service for school personnel, and how can such a service be implemented?

EMERGENCY SERVICES FOR INJURIES AND SUDDEN ILLNESS

There is widespread agreement among those concerned about the problem that every school should have a planned, written program for the care of emergencies which includes specific steps for: (1) giving immediate care, (2) notifying parents, (3) getting pupils home, (4) guiding parents, where necessary, to sources of further assistance. There is ample evidence that more complete arrangements for emergency care need to be made in many places. However, in order to plan intelligently, we need answers to such questions as:

1. Specifically what information should we have readily available at school about each pupil?

2. In a program for care of emergencies what are the responsibilities of parents, pupils, teachers, administrators, school medical adviser, nurse serving the school?

3. What are the accepted first aid procedures?

4. What should the well stocked first aid kit include?

5. How should we transport sick or injured children from the school to the home?

6. Who is responsible for medical and hospital bills which might arise out of an emergency situation?

7. What special arrangements need to be made for meeting emergencies in rural schools?

8. What should schools do in planning for maximum safety to pupils in school at the time of civil disasters?

9. How can we make the most of the educational opportunities in meeting emergencies at school?

10. How can schools best meet the problem of athletic injuries? What medical supervision is needed here?

11. Are accident benefit plans sufficient? Should they be extended to all pupils in a school system?

12. Who should be involved in planning for the meeting of emergencies at school?

13. What kinds of records should be kept on each accident or other emergency situation?

14. Is there any evaluation instrument against which a school could check the adequacy of its plan for meeting emergencies?

15. Where can school administrators get professional assistance in developing a plan for meeting emergencies at school?

HEALTH ASPECTS OF PHYSICAL EDUCATION

This is an area where we are often guilty of talking "guess-ometrically." There is need for extensive research on posture, the effects of vigorous physical activity, psychological attitudes of participants toward physical education activities, and energy expenditure in various types of physical activity.

1. What is the relation of modern education, including physical education, to emotional maturity and psychological disorders in children?

2. What is the extent of fatigue among high school and college students, especially girls, and what are the causes?

3. What is the effect upon participants of vigorous physical activity?

4. What is the best type of activity program for schools at various levels?

5. Why do pupils with the help of their parents so often seek excuses from physical education? Why do physicians, if they really believe in physical education, give excuses so freely?

6. How many physical educators secure cooperation of physicians in the supervision of individual and adapted physical education?

7. Is it necessary to have a physician trained in orthopedics or in physical medicine to supervise individual and adapted physical education programs?

8. Is it possible to develop an examination which will serve for high school athletes, Boy Scouts, the Y.M.C.A., the R.O.T.C., and others?

9. How effective is the physical educator's classification of boys and girls for physical activity where medical service for this purpose is not available?

10. Is it feasible to develop a standardized health examination for athletes? Is a special kind of examination for athletes needed beyond that given to all pupils?

11. How frequently should participants in interscholastic athletics be given a medical examination?

12. What are the effects of interscholastic activities on the physical and mental health and personality of students?

PRESERVICE AND INSERVICE EDUCATION OF SCHOOL HEALTH PERSONNEL

Vast improvements in this phase of school health could be made if we had the results of research on the following questions and problems:

1. How can teachers become skilled at screening procedures which will be useful to and accepted by physicians?

2. How can we adequately prepare physicians for the kinds of services and experiences school medical advisers encounter?

3. How can an analysis of the physical, emotional, and social health problems encountered by the nurse be used to good advantage in developing preservice and inservice training for public health nurses engaged in school health?

4. How can the study of child health and development be used more effectively in motivating teachers who will appreciate the health problems of school children?

5. How can personnel from official and voluntary community health agencies be utilized in planning and conducting preservice and inservice programs for school health personnel?

6. How can we evaluate and improve the methods and techniques employed in preservice and inservice education of school health personnel?

7. How can we gain greater coöperation in closing the gap between the objectives of the school health program and what is really being accomplished?

8. Where are the "Suggested School Health Policies" actually put into practice? A careful objective study of the effects of these policies in operation would have many implications for preservice and inservice education programs.

9. Can we establish pilot projects in which "Suggested School Health Policies" will be applied throughout several different types of school systems and which would provide a proving ground for the policies and a training ground for school health personnel?

10. How can school board members and legislators be more directly involved in planning for better school health programs and in programs for the preservice and inservice education of teachers, administrators, and school health personnel?

The Committee on Research believes that significant progress has been made in school health. It also believes that in every area there remains much opportunity for further progress, enhanced coöperation, and broadened program based upon sound research. As expressed by the National Conference for Cooperation in Health Education,

In view of the world-wide situation, special problems will arise and ordinary problems will be intensified through special civil defense requirements, military mobilization, personnel and material shortages. In these circumstances it becomes imperative that all available means be utilized to the end that progress achieved shall not be lost, and that further progress shall not be unnecessarily hampered. Indeed, the emergency itself should be utilized to further public and professional interest in sound and well conceived programs, while exercising special watchfulness against ill conceived, opportunist, or self-serving projects introduced as proposed emergency measures.

WARREN H. SOUTHWORTH, DR.P.H.
School of Education,
University of Wisconsin,
Madison, Wis., *Chairman*
C. ADELE BROWN, M.D.
CYRUS H. MAXWELL, M.D.
MARY STEICHEN, M.D.
HOWARD S. HOYMAN, ED.D.
C. L. OUTLAND, M.D.
ALBERT D. KAISER, M.D.
MARJORIE L. CRAIG

Suggested Standards for Health Services in Secondary Schools*

School Health Section

THERE is a recognized need for health services to the adolescent attending secondary school.† Such services offer opportunity to meet the health needs of the young citizen before he leaves school to enter employment or the armed services. They should also serve to help him assume intelligent responsibility for his own health and that of his family.

The Problem

The needs of the adolescent and the structure of the secondary school make it necessary that the administration of health services be designed to meet the special needs of the secondary school and its students.

The pupil in the secondary school, who is most frequently between 12 and 18 years of age, is at that stage of development in which he is seeking independence from parental control and status for himself. He is increasingly ready to assume responsibility but needs a sympathetic adult outside his family circle from whom he may seek advice and support.

The school, on the other hand, departs more and more from the elementary school pattern of a single classroom teacher responsible for a single group of children. In the four highest grades, at least, the high school is usually completely departmentalized. The pupil loses contact with a single teacher and is taught instead by a number of teachers whose attention is centered on the teaching of specific subjects rather than on the personal needs of their pupils.

There may also be a demand on the part of the school administration for special medical services to athletes which consume the major part of the budget for student health services.

The Health Service Program

I. Personnel and Administration

The Committee recommends as a primary need of the secondary school student a single adult on the school staff to whom he can turn for all types of advice, including assistance on problems of physical, mental, and emotional health. Such a "teacher-adviser" should have a closer relationship with the pupils assigned to him than would the guidance counselor or dean.

The Committee agrees that the concept of a "teacher-adviser" for a limited group of pupils is more important than the amount of medical and nursing service available in any school. Such a person should have available to him sound medical and public health advice and should know how to use it.

Medical direction of health programs in schools is always essential, regardless of a school's location or the grade level in the school. As used in this report, medical direction (supervision) connotes advisory services and policy formation rather than day-to-day medical services. These latter services need not always be

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* Report of the Committee on Health Service Programs for Secondary Schools. The Committee conducted Round Tables at the American Public Health Association Annual Meetings in 1949 and 1950 and, as a result of discussion at these meetings and at meetings of the Committee, has prepared the attached report for the approval of the School Health Section.

† 7th–12th grades.

provided within the school, for they are sometimes, more accessible elsewhere in the community.

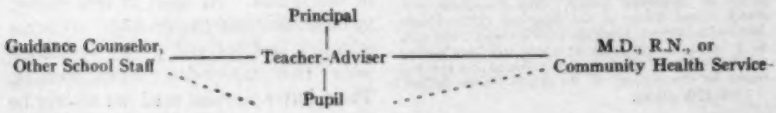
A. THE "TEACHER-ADVISER"

It is important to find or develop secondary school teachers with the personality, ability, and interest prerequisite to successful functioning as teacher-advisers to adolescent students. Such an adviser must have a sufficiently flexible schedule so that he may have enough time to develop a personal relationship with his students and advise them much as the best elementary school home room teacher does. He (or she) should be more interested in the pupils than in the teaching of subject matter. He should be capable of observation and listening without feeling compelled to be critical or to force the pupil to accept the adult viewpoint. The degree of emotional maturity of the adviser is of great importance, and tolerance, warmth, and flexibility are essential to good relationships with pupils and colleagues.

Assuming that a minimum of 2 hours per pupil per year is needed in order to carry out anything like a satisfactory program, one adviser given 1 free hour per school day would have 180–190 hours during the school year and might carry 100 pupils or less.

The activities of the teacher-adviser should include his or her teaching job; observation of the pupils assigned; accumulation and recording of these objective observations and those of other faculty members; conferences with the pupil, the pupil's parents, other members of the faculty; and home visiting when indicated. Where school health service personnel are available, he should refer health problems to them. Where there is only an advisory health service, he should confer with the physician or community agency involved.

Provisions should also be made to facilitate transfer of a pupil from one teacher-adviser to another when either the adviser or the pupil feels that a good working relationship is not possible. The pupils should be free to consult with any member of the school staff without special permission of the assigned adviser or principal, but so far as possible the faculty members should work through and with the assigned teacher-adviser. The administrative diagram below shows the suggested lines of communication between those involved. The broken lines indicate that, whereas in most instances other members of the school staff will not initiate action before consultation with the adviser, there will be times when they will be working directly with pupils or their parents quite independently, although with the knowledge of the teacher-adviser.



B. THE PHYSICIAN

The physician serving the secondary school should meet the qualifications for the school physician outlined by the American Public Health Association and should have, in addition, special training in the developmental aspects and health problems of adolescence.

The physician could participate in the medical direction of the health service program in these ways:

1. As adviser to the school administrator about epidemic control, sanitation (toilets, food-handlers, dishwashing), safety, lighting, nutrition (school lunches), demands of the

school day upon the pupils and staff, health of the staff, etc.

2. By giving direction in planning and implementing a program of health examinations and follow-up.
3. By serving as consultant to teachers and pupils who seek his counsel about personal health or about health education.

The source of this medical direction will vary with the local situation. In many areas it may come from the health department or from the school system. In other areas, particularly in nonurban regions, medical supervision may come from a school-community committee or a committee in the medical society, or from a physician-parent.

In any case, physicians who assume these duties should have knowledge and experience about well and sick children and should be familiar with present-day methods and viewpoints in education and public health.

C. THE NURSE

The nurse working in the secondary school or acting as a public health consultant to the school should meet the following qualifications:

A graduate from a university school of nursing preparing for public health positions under qualified supervision, accredited by the National Nursing Accrediting Service, or (in addition to her basic nursing education) completing the program of study in public health nursing accredited by the National Nursing Accrediting Service.

Preparation for work in the school should include courses in child growth and development, school organization and administration, nursing in the school health program, guidance, principles and methods of group health instruction, and field work in a school situation or in a school health program where the public health nursing services are rendered through a generalized public health organization. These courses may be planned as part of the program of study in public health nursing or of the baccalaureate degree program.*

In addition, special emphasis should be given to satisfactory completion of a program of study and supervised field experience dealing with problems of the adolescent. Public health nurses responsible for giving service in secondary schools, to whom continuous nursing supervision is not available, should have completed at least 2 years of satisfactory progressive experience in a public health agency providing an acceptable standard of nursing supervision.

If a public health nurse is appointed to the teaching staff of a secondary school, she should meet general educational and professional preservice requirements comparable to those of other members of the faculty.

D. STAFF EDUCATION

The health education of the teaching staff, including advisers, health education staff, nurses, and physicians, must not stop with the completion of required courses. Various aspects of health should be presented and discussed at faculty meetings throughout the year for the benefit of all. As pupil problems are discussed, participation by the medical, nursing, and adviser groups can do much to further the concept of the "whole child" among other faculty members. Studies of absenteeism, surveys of the over-all school health program, reports on the findings of screening programs, and statistics summarizing the health problems of the community are all excellent topics for discussions designed to keep the school personnel up to date and interested in health.

School nurses and physicians should be given whatever time and encouragement is necessary to insure their attendance at health department meetings, inservice courses, and summer workshops designed to keep them up to date and interested in improving the well-being of secondary school students.

Universities, teacher colleges, and health and education departments must recognize their responsibility to provide

* Qualifications as outlined by the National Organization for Public Health Nursing.

such meetings, courses, and workshops both for nurses and for teachers.

E. RESPONSIBILITY FOR FOLLOW-THROUGH

It is essential that all persons concerned with the welfare of a specific student (teacher-adviser, referring teacher, physician, nurse, guidance counselor) plan together for the solution of each problem as it arises. Responsibility for follow-through should be allocated to the appropriate member of the group, so that there will be no duplication or confusion.

F. THE SCHOOL HEALTH COUNCIL

Formulation of policies and procedures for the school health service should be the function of a school health council. Membership of such a council should represent all those in the school and community with a concern for student health, including the administrative staff, medical and nursing staff or advisory group, teachers of health education and other subjects, lunchroom and custodial staff, and student representatives.*

II. THE SCHOOL ENVIRONMENT

Though primarily the responsibility of the administrator, the health content of the school environment should not be overlooked by those in charge of the health services. Regular inspections of the buildings and playgrounds by health personnel, and also consultation in planning new construction, are valued highly by many administrators. Standards for lighting, floor space, etc., and excellent descriptions of modern school construction are to be found in *American School Buildings*, published by the American Association of School Administrators.† It must be remembered, however, that despite expert planning, equipment and maintenance, the physical environment of the classroom will depend to a great extent upon the teacher's attention to it. Nevertheless, the emotional environment of the classroom is of far greater importance to the ultimate well-being of the pupils. Cooperation between education and health departments can go far to better the emotional environment in the schools by joint planning for preservice and in-service training courses, screening of new applicants, and interpretation to teachers of the emotional needs of individual pupils.

III. MEDICAL ASPECTS OF THE SERVICE

A. RECORDS

A cumulative record should accompany the student from kindergarten to graduation from high school. Developmental data, medical findings, and follow-through should be recorded along with immunizations and significant medical history of illnesses, injuries, and special needs. The observations of teachers and adviser should be a part of the cumulative health record.

Likelihood that defects will be remedied, that follow-up examination will not be forgotten, and that special needs will not be overlooked will be enhanced by utilization of a simple tab system to identify special records.

The records of accidents and illnesses of pupils should be available for use as a basis for the content of health teaching in the schools. Teaching based on needs and real problems is meaningful, and records of the school's students are invaluable in this respect.

B. MEDICAL EXAMINATIONS

1. *Frequency*

The value of routine annual examina-

* See also: Report of Committee on the Relationship of Voluntary Agencies to the School Health Program. School Health Section. A.P.H.A. *News Letter*, September, 1951.

† Twenty-seventh Yearbook. Prepared by the Committee on American School Buildings; edited by Hazel Davis. Washington, D. C.: The Association, 1949. 525 pp.

tions must be questioned. One thorough, meaningful examination is much to be preferred over several hasty yearly checkups. Greater reliance should be placed on screening and non-diagnostic types of examinations, on observation of pupils by everyone who comes into contact with them, and on conferences between medical personnel and teachers and parents. The limitations of physical examinations carried out where there is not easy access to specialized personnel and laboratory facilities need to be recognized when medical examinations within the school are being considered.

2. *Priorities*

Medical examinations might well be performed in the following order of priority:

a. Pupils who have returned to school without a medical certificate after prolonged or frequent absence.
b. Pupils referred by the school staff.
c. Pupils entering school for the first time.
d. Pupils leaving school before the next scheduled health examination. (N.B. This should include examinations for employment certificates where required.)
e. Pupils entering junior high school.
f. Pupils ready to graduate from senior high school.

The health examination should be thorough and the physician should have the results of screening examinations (audiometry, vision testing, height and weight, chest x-ray), as well as the teacher's observations, available to him. The examination should be aimed at being a favorable educational experience for the pupil. The practice of having parents present during the examination, so desirable for elementary school children, is not recommended in the case of older pupils in the high school age group. Pupils of this age should be encouraged and expected to take an active interest in and responsibility for their own health. Under certain conditions, as where follow-through presents difficulties, parents need to be brought into the conference but the situation should be discussed with the pupil and he should make the arrangements with his parents.

3. *Referral Examinations*

Medical examinations based on referral from a teacher, nurse, or parent should take preference over periodic examinations. Referral may be based on history, behavior, or performance on a screening test. Teachers' observations are an integral part of the referral system. There should be no limit to the frequency of examinations on the referral basis.

Students and their parents should be encouraged to seek appointment with the school medical adviser, and if previous health examinations have been ideally conducted, a good student-physician relationship will have been established.

4. *Follow-Through*

The contributions of a school medical service can be measured (a) by the extent to which pupils' attitudes and behavior are influenced for the better and (b) by the amount of follow-through to secure medical care for health impairments discovered at health conferences. Personnel in the school medical service have a leading role in helping pupils and their parents to understand the significance of medical findings and in assisting them to plan the next steps in follow-through.

C. EXAMINATION FOR ATHLETIC TEAMS

Candidates for athletic teams require more frequent examination than those not participating in athletics, but the scope of the examination should be narrower than that prescribed for other pupils. Supplementary examinations to detect impairments of the cardiorespiratory, skeletal, and muscular systems which would interfere with fitness for athletics should be introduced. Candidates for teams should be examined before the season, after illness or injury, when there is unusual behavior or ap-

pearance, and at the close of the season. The coach of a team has the same responsibility for diligent observation to detect impaired health as has the classroom teacher, and he should be governed by the recommendations of the school physician or family medical adviser.

It is a serious question whether the detailed and special examination of athletic team members should be related to the school health program when resources of funds and services are limited. The examination of athletes, beyond the scope provided for all pupils, might well be considered a legitimate financial responsibility of the athletic program, which is usually financed and administered separately from the scholastic program. The results of these examinations should, however, be part of the pupil's cumulative health record.

IV. Screening Procedures

A. Type of routine test used

1. *Vision Tests*

Annual screening of the vision of all secondary school students by properly prepared personnel is recommended, in order to keep a constant check on the pupil's visual status. The screening test used should meet with the approval of a committee representing the local eye professions. Persons responsible for giving the test should be trained to give it under recommended standard conditions.

In addition, all teachers should be alert to the earliest sign or symptom that might indicate eye trouble. Such signs as the following are significant:

A scowling expression
Blinking of the eyes
Tilting the head to one side
Holding the book close to the face
Failure to concentrate or keep up with class work when other causes have been ruled out

2. *Hearing Tests*

The instructor is regarded as the key person in calling attention to the need for hearing tests in selected cases. Mass testing, however, is usually done by one person especially trained for this work. The ideal method for screening hearing is an individual pure-tone test given with a discrete frequency audiometer. Unfortunately, the time-consuming element precludes its use in most schools. A group pure-tone test recently developed in Massachusetts (the Massachusetts Hearing Test) gives promise of providing an answer to the problem of screening hearing satisfactorily on a mass basis and is widely used in that state. The Western Electric 4C audiometer, which provides phonograph record speech tests for as many as 40 students at a sitting, has been widely used with effective results. Some form of group audiometer testing is now accepted procedure in the school health program, with the pure-tone audiometer used in individual tests of especially selected cases when it is available. Audiometer testing should be done in a soundproof room or booth if possible. If this is not available, the quietest room in the school building should be selected for the test.

B. Who shall give the tests?

This is a question which often must be answered in terms of available personnel and local regulations. The consensus of experts is that the newer-type vision and hearing tests should be given by a person especially trained in the technics of screening who can devote full time to this work, whether it be a nurse, a teacher, or a technician. Several states have established a Civil Service title, "Audiometrist," with qualifying training and examinations for such a technician. The Massachusetts Joint School Health Council recommends that a specially trained person, neither a nurse nor a teacher, be employed for giving vision and hearing screening tests. Many cities meet their needs, however, by delegating to one nurse or teacher

this special assignment after she has taken training for the work. Schools with their own specialized corps of nurses often provide special training for every nurse, so that they may give all the screening tests in their own schools. Irrespective of who gives the tests, there must be close liaison between tester, nurse and instructor, since the instructor must be continually alert to changing conditions among her students. Needless to emphasize, the use of screening tests for vision and hearing calls for simultaneous health education for students and parents, as well as thorough follow-up of testing results, to insure a complete health program in this area of vision and hearing.

C. OTHER SCREENING PROCEDURES

1. *Weighing and Measuring*

Height and weight should be measured routinely as a part of the periodic health and screening examination.

Where this is a part of the cumulative health record, it may be done by the physical education instructors as a part of their responsibility. All secondary school students should be weighed and measured at least annually.

2. *Dental Case Finding*

It may be assumed that all students in secondary schools need dental care. The problem is one of stimulating these students to go to their family dentist at least once annually. A strong program of health education, along with individual health guidance and counseling, will help in achieving dental supervision for every student. A careful system of follow-up by the school nurse or other appropriate person must be devised and there must be some provision for dental care of the indigent student. Provision should also be made for excusing secondary school students for needed visits to private dentists during school hours—"excuse without absence," a privilege now accorded students sent to dental clinics.

3. *Tuberculosis Detection Program*

The National Tuberculosis Association recommends two types of case finding programs for use in high schools:

a. Chest x-rays followed by other diagnostic procedures if indicated, or
b. Tuberculin testing followed by a chest x-ray for all reactors. These are recommended for either the junior or senior year (grades 11 or 12).
c. X-ray and/or tuberculin testing for every student when he leaves school for work or other reasons, and before he participates in athletics.

The choice of program should be in line with policy in each community.

Careful studies by the various tuberculosis associations throughout the country indicate the inadvisability of using mass testing procedures at the junior high school level.

As in the case of other screening procedures, health education and thorough follow-up programs will insure the best results from suggested case finding procedures.

4. *Hemoglobin Testing*

One of the screening tests now recommended for use with high school girls is that of hemoglobin testing by an "approved" method. For screening examination, micro methods may be used. Hemoglobin testing as a screening device is not currently in general use.

When the family physician gives the periodic health examination, or when students are referred on a selective basis, it may be requested along with other tests such as urinalysis.

V. ACCIDENTS AND OTHER EMERGENCIES

A. ACCIDENT PREVENTION AND SAFETY EDUCATION

Plans for safety education, accident prevention, and care of emergencies should be a responsibility of the school health council.

1. *Prevention of Accidents*

Every effort should be made to protect secondary school pupils against accidents in halls, classrooms, and laboratories and in the gymnasium and on the athletic field. There should be adequate lighting in halls and on stairways and effective measures for fire prevention throughout the building. In shops and laboratories, equipment should be designed and safety devices, such as goggles, provided to protect the pupil at work. Athletic instructors should be responsible for the safe condition of equipment and fields.

2. *Safety Education*

Periodic study of accidents, their causes, and their care is useful in determining causes which may be removed, adverse results which may be reduced, and material which may be utilized for student safety education. Safety education should be incorporated into the instruction in health, shop subjects, home economics, laboratory sciences, and wherever else it may be indicated.

B. CARE OF EMERGENCIES

Each teacher and other school employee should receive a copy of *Instructions for the Care of Emergencies*. Because of the complications of the secondary school organizations, the age of the pupils, the special hazards of laboratory and shop, there is usually need for development of a special set of instructions for each secondary school. These are based on the same "standing orders" and general policies upon which are developed instructions for elementary schools. To insure understanding and support and because of legal implications, approval of the instructions should be obtained from the Board of Education. The "standing orders" which are incorporated in the *Instructions* should be developed or approved by the local medical group and signed by the school physician.

Determination of location of first aid cabinets throughout the school building might be a health council project. Locations may include the health room, the kitchen, garage, shops, laboratories, etc. Each cabinet should contain a copy of the *Instructions for the Care of Emergencies*, with approved modifications indicated by the particular situation: specification of the types of injuries to be cared for at the station by the person in charge; those for whom a first-aider, nurse, or physician is to be summoned; those who are to be taken to the health room; those for whom an ambulance is to be called. Plans should be made to insure instruction of all new employees in safety, accident prevention, and first aid and for refresher courses for all staff members, with special provisions for those in strategic positions.

VI. EXCEPTIONAL CHILDREN

The secondary school, like the elementary school, is faced with the problem of supplying special facilities for the education of exceptional children. The physically handicapped comprise the greatest number of these pupils. The advent of adolescence and the graduation into a larger and more impersonal school environment often accentuates the frustrations of physically handicapped pupils. In addition, the handicapped pupil is confronted with the problem of choosing a vocation and a way of life in which he or she can be comfortable and satisfied despite the handicapping condition.

The exceptional pupil's elementary school record should be sufficient to inform the secondary school of the problem. Periodic reëvaluation of the situation by medical, teaching, and guidance personnel is essential, however, to permit optimum adjustment of the pupil in the school, to avoid continuance in special classes of those who no longer need them, and to plan realistically for the pupil's career after he graduates from high school.

Special classes in regular schools are

favored over maintaining special schools for exceptional children. This practice is based on the assumption that wherever possible the exceptional pupil should have part of his or her school experience in regular classes or at least have daily contact with the rest of the student body, just as he will be in contact with other members of the community after graduation.

Thus, the secondary school which enrolls handicapped pupils needs good medical services, specially trained teachers and guidance personnel, and appropriate physical facilities, including elevators and lighting and seating equipment, depending upon what special classes are included.

REGINE K. STIX, M.D.
New York City Department of Health, New York, N. Y., *Chairman*
ALAN FOORD, M.D.
FRANKLIN M. FOOTE, M.D.
J. ROSWELL GALLAGHER, M.D.
MARY B. RAPPAPORT
THOMAS E. SHAFFER, M.D.
MARY E. SPENCER, PH.D.
MARIE SWANSON, R.N.
RUTH G. TAYLOR, R.N.

The Accuracy of Health Content of School Textbooks*

School Health Section

AT the 1950 meeting of the Section, the plan of procedure proposed by the Committee was accepted by this Section. This report deals with the progress which has been made since last year's meeting.

REVIEW

The purpose of the Committee is to "arrange for the appraisal of the scientific accuracy of health information in selected textbooks used in public schools."

The Committee consists of three members appointed by this Section and has been augmented by several individuals representing other organizations interested in the same problem. A number of teams of persons outside of the Committee membership were set up to review individual books.

To date, 12 teams, comprising a total of 73 individuals, have reviewed 11 different books—one book having been reviewed by two teams. Nine of the books were on health education and two on biology. All except one were secondary texts, the exception being a college text. About 10 other teams have not as yet submitted their reports.

Most of the teams have had the coverage requested as regards professional background of team members. Such teams have included a physician, dentist, nurse, health educator, nutritionist, and teachers from various areas, depending upon the nature of the book.

OBSERVATIONS FROM THE 12 REPORTS

Extent of Inaccuracies—The number of inaccuracies and controversial statements reported by the 12 teams range from 2 to 124, with an average of 43. This range does not necessarily reflect the relative number of errors, since the teams differed in the types of inaccuracies reported—some indicating only factual errors and others those of a less specific nature. Also, the number of individuals with varying technical background on a given team determined in part the number and kinds of errors located. A number of the inaccuracies reported will probably be found not to be actual errors after more careful study of the respective items is made.

A check on the extent to which inaccuracies are being caught is had through the following:

1. In instances where each team member reviewed the entire book, it is apparent that no one individual caught all mistakes. Reasons for this are that the individual did not recognize them as mistakes (a) due to his own limited background in the particular subject area, (b) because of less careful analysis of the possible interpretation of the thoughts conveyed, or (c) because the inaccuracies were simply overlooked.

2. In the case of the one book which was reviewed by two teams, the same points apply. In this instance, one team reported 72 inaccuracies and the other reported 124. The latter team included

* Report of the Committee on Health Content of Textbooks presented to the School Health Section at the Seventy-ninth Annual Meeting of the American Public Health Association in San Francisco, Calif., October 30, 1951.

more items classifiable as "controversial," which principally accounted for the larger figure. Both teams did find, in the main, the same factual errors.

Inaccuracies of purely factual types were seemingly most common in the area of nutrition and in first aid. In the case of nutrition, this situation was to be expected when one considers the rapid evolution this subject has been undergoing.

STEPS STILL TO BE TAKEN

We will encourage the remaining teams to finish their work. Then the plan is for the Committee to evaluate each item to determine whether or not we agree on it as being an inaccuracy. Then the items about which we are in doubt will be referred to experts in the appropriate areas for their opinion.

The Committee will then (1) make certain observations which will deal mainly with (a) the relative extent of inaccuracies in secondary school textbooks, (b) the health areas in which they most frequently occur, and (c) any other points of significance which may become evident; and (2) prepare appropriate recommendations which may seem to have significance in light of the findings.

ADDITIONAL STEPS THAT MIGHT BE TAKEN

Following the completion of the report, as just described, the question arises as to what should next be done. Here are a number of possibilities:

1. Continue the procedure with additional books (a) on the secondary school level in health education and other subject areas, such as home economics, biology, general science, and social studies; and (b) on other levels, such as elementary and college.
2. Prepare a report for publication in the *American Journal of Public Health*. Such a report would present broad findings and recommendations but would not indicate the names of individual books, authors, or publishers involved in the study—these matters being held confidential.
3. Advise publishers in general of our findings, interpretations, and recommendations without specific reference to a book or author.
4. Contact individual publishers whose books have been reviewed, to advise them that their books have been reviewed, and, if they so desire, acquaint them with the report on their books.
5. Do the same as in Step 3 for individual authors.
6. Acquaint potential buyers of school health texts of whatever recommendations the Committee might arrive at and which might serve as a guide to them in selecting books which contain health content.
7. Make teams available for the appraisal of additional books on specific request of authors, publishers, or potential users.

H. F. KILANDER, PH.D.
Specialist for Health Education, U. S. Office of Education, Washington, D. C., *Chairman*
FRED V. HEIN, PH.D.
HAROLD H. MITCHELL, M.D.

NOTE: The Section Council, following the presentation of the report, voted that the committee continue for another year and that its activity be limited to plans 1, 2, and 3 under "Additional Steps."

American Public Health Association

Statement of Income and Expense

January 1 to December 31, 1951
(with some interpretation)

The Association has two types of income, designated as "General" and "Earmarked." Somewhat over one-half of the total income in 1951 was from "General Income" including membership dues, which are available for the operation of the basic services of the Association. In 1951 "General Income" exceeded expenses by $1,841.95. The allocation of "General Income" is the responsibility of the Executive Board.

The rest of the Association income is "Earmarked," since it is accepted for specific projects by the Executive Board and must be expended for the purposes given, under the Board's supervision.

The custodian of all Association funds and properties is the Treasurer. Income from all sources is deposited to the account of the Treasurer and can be withdrawn only upon his signature.

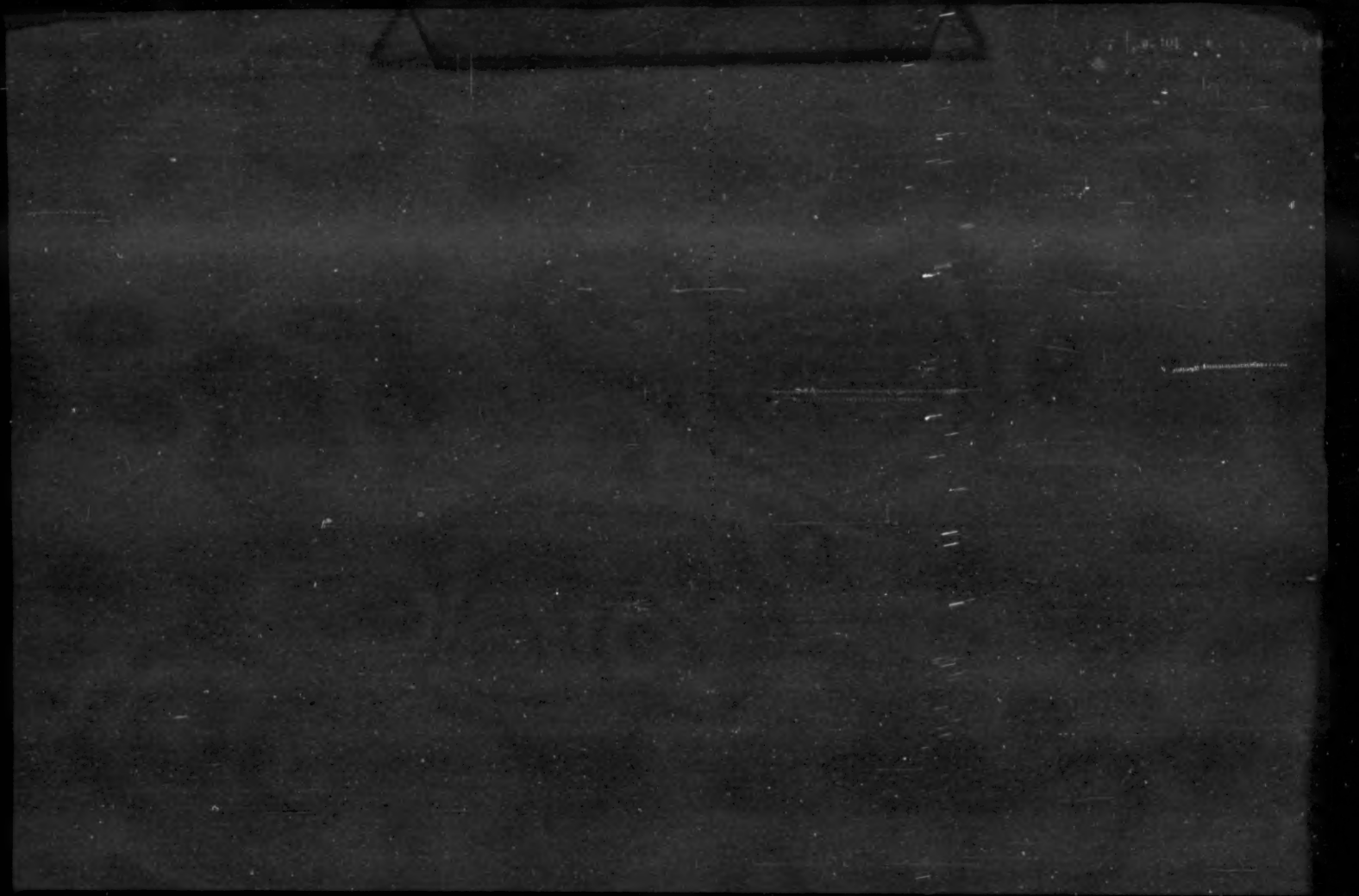
The following statement is published at the request of the Executive Board for the information of the membership.

General Income and Expense Covered by It

	Income	*Expense*
Income from Membership Dues (all classes)	$102,734.25	
Expense charged against dues income: Rent, maintenance, library service, Sections and Branches; travel of Executive Board and Executive Secretary; membership maintenance and promotion; public relations; auditor; rebates to affiliated societies; staff salaries		$129,619.69
Income from *American Journal of Public Health*	85,609.62	
Expense charged against *Journal* income: Printing, paper, cuts, mailing; salaries of Editorial staff; Editorial Board travel		105,257.94
Income from Association Publications	36,791.75	
Expense charged against publications income: Printing and distribution; discounts to dealers; share of proceeds to collaborating agencies; salaries		20,114.32
Income from Annual Meeting (all sources)	40,206.24	
Expense charged against Annual Meeting income: Exhibit costs; rental fees; Program Committee and staff travel; programs and registration supplies; promotion		26,245.24
Income from Field Studies	18,236.38	
Income from Miscellaneous Sources (Interest on securities, discounts for cash on accounts payable, etc.)	10,583.65	
Expense—Committee on Research and Standards Travel; supplies; salaries		4,715.29
Expense—Committee on Professional Education—Including Vocational Counseling and Accreditation Committee travel; consultation fees; printing and supplies; staff salaries		6,367.46
Total non-earmarked income and expense	294,161.89	292,319.94

EXPENSE COVERED BY EARMARKED INCOME

(Income from grants is identical with expense for each project; unexpended balances are segregated and held over for expenditure in 1952.)

	Income	*Expense*
Subcommittee on Medical Care		$ 20,057.78
Research and studies on methods of administering medical care		
Evaluation of Administrative Practice		4,588.90
Studies on procedural methods in the control of such diseases as pertussis, endemic goiter and typhoid fever		
Subcommittee on Local Health Units		580.70
Coöperative program with the National Health Council in developing local activity for adequate health services		
Accreditation of Field Training Areas		11,754.17
Subcommittee on Hygiene of Housing		10,353.49
Studies and promulgation of principles of and standards for healthful housing		
Professional Examination Service		90,594.87*
Preparation of materials for examination of candidates for public health positions; development of examinations for American Board of Preventive Medicine and Public Health and for Division of Commissioned Officers of the Public Health Service		
Professional Examination Field Service		18,524.29
Field consultation in use of examinations and on problems of personnel administration		
Engineering Section Project		27,906.05
Research in administration of environmental sanitation programs; consultation on curricula; personnel placement		
Inter-Association Committee on Health		391.79
Lasker Awards		6,446.88
Processing of data on candidates and recipients		
Association Committee on Child Health		14,938.95
Compilation of standards; study of possible use of health department facilities for training of physicians		
Total Earmarked Income and Expense	$206,137.87	$206,137.87
GRAND TOTAL OF INCOME AND EXPENSE	$500,299.76	$498,457.81

* Includes fees for service.